# Structural changes in the organisation of world trade and implications for the shipping industry

by

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Research Report 18/2002

**Norwegian School of Management BI**

Department of Innovation and Economic Organisation

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Research Report 18/2002
ISSN: 0803-2610

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Printing: Nordberg Hurtigtrykk

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## Preface

This research project has been carried out at The Norwegian School of Management BI with financing from the Norwegian Shipowners´ Association. The grant was given in the early months of 2000, but due to a combination of manning problems and heavy workload on the part of the BI staff, the preparatory and planning stage lasted longer than anticipated.

The project idea was initially one in a package of several possible ideas presented to the Norwegian Shipowners´ Association in 1999, but the Association decided to financially support this project. The objective of the project has been the same all through the study with focus on implications for the shipping industry of structural changes in the organisation of world trade. With an emphasis on organisational issues in globalisation of trade and logistics it was felt necessary to man the project with expertise both in organisation and logistics theories to secure the bridge to the shipping expertise that was of course central to the project. The project has by this interdisciplinary cooperation demonstrated the fruitfulness of different BI departments working together.

Globalisation of trade and logistics poses opportunities as well as threats to the shipowners. Initially in the report these are dealt with on a more general level, but the conclusions are harmonised with the findings from a detailed study of the development in the automotive industry. Finally the implications for strategic adaptations in the shipping industry are drawn.

The power base may change in the supply chain due to globalisation and it will be very important to the shipping industry to position itself so that it can seize available opportunities and minimize threats.

A draft was presented to the Norwegian Shipowners´ Association in April 2002, but has on the basis of views presented by the Association, been thoroughly revised in this report. The Norwegian School of Management BI is pleased to present this final version of the study and hope that it may form a useful basis for the development of strategic plans in the shipping industry for incorporating probable organisational trends in global trade and logistics.

Sandvika, 31 October 2002

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Abstract

The report documents the results of a research and technical development (RTD) project focusing on the implication for the shipping industry of structural changes in the organisation of world trade. Among the many driving forces behind globalisation of trade and of business trends in logistics and supply chains have been identified and looked into. Characteristic features of leading firms have been identified.

The recommendations for the shipping companies comprise the development of an analytic framework consisting of two dimensions. Together, these two dimensions serve to identify central questions in global strategies of sea transport firms. The vertical dimension uses four categories developed for the report as the dimensions of change (product, time, space and actors). Against this dimension a horizontal dimension is drawn, consisting of what we see as three crucial strategy areas (marketing, logistics and Human Resource Management (HRM) for sea transport firms.

It is further recommended to base the development of the analytical framework on the use of scenario technique. This is a good strategic planning method when it comes to structuring a mass of more or less conflicting development trends of varying degree of quantification.

**Key-words:**
Trade, globalisation, organisation, shipping, innovation, management

**Emneord:**
Handel, globalisering, organisasjon, sjøfart, innovasjon, ledelse

## Summary

World trade has in many countries for years grown faster than economic indicators, such as Gross Domestic Product (GDP) and seemingly will continue to do so for the foreseeable future. The reasons behind this development are well known and have been summarised in the report. Parallel to the economic development a profound restructuring of businesses is going on, turning them from national into international, multi-national or even global enterprises. Simultaneously the way enterprises are doing business and managing human and other resources is changing fundamentally.

The competition at the market place is tougher than ever before, and to gain competitive advantage a company must focus on productivity and cost but equally much on the service offered and benefits bestowed upon its customers. Companies succeeding well in this challenge of balancing benefits and costs are in the literature called companies at the leading edge. Current characteristics of such companies have been summarised in the report under the following phrases:

- From functions to processes.
- From profit to performance.
- From products to customers.
- From inventory to information.
- From transactions to relationships.

From functions to processes

Conventionally, organisations have been vertical in their design. In other words businesses have organised around functions such as production, marketing, sales and distribution. In this organisational model each function has a clearly identified task and there is a recognised hierarchy up which employees might hope to progress. The organisation is inwardly focused and concentrates primarily upon the use of resources rather than upon the creation of outputs. However, successful outputs in the market can only be achieved by co-ordination and co-operation horizontally across the organisation.

Horizontal linkages mirror the materials and information flows that connect the customer with the business and its suppliers. They are, in fact, the core processes of the business. In the horizontal organisation the emphasis is upon the management of processes. These processes are cross functional. The discipline *logistics* deals with the principles of such flows and their effective management.

The justification for the radically different view of the business is that these processes are in effect *capabilities* and it is through capabilities that the organisation competes. In other words the effectiveness of the new product development process, the order fulfilment process and so on, determines the extent to which the business will succeed in the market place.

### From profit to performance

Long-term sustained profit has of course to be the goal of any commercial organisation, but there is a growing realisation that if profit is the end, then we should spend more time examining the means whereby it is achieved. When employees are required to clock in and out of work each day, punctuality may be improved but their willingness to work more than the agreed hours may be reduced and the motivation to make innovations may be negatively influenced. Understanding what the critical performance criteria might be and therefore should be measured is vitally important to the organisation.

The underlying logic of this viewpoint is that performance drives profitability. Therefore, if we get the right performance then profit may follow. Many of these new performance indicators will be non-financial. That is, they will focus management's attention upon such things as customer satisfaction, flexibility and employee commitment.

### From products to customers

Even though the marketing concept has gained widespread acceptance across industry, there is still an underlying tendency to manage products rather than customers. This emphasis may be reflected in job titles and in accounting systems that can provide precise information on product profitability but are incapable of measuring the profitability of customers.

Because customer satisfaction has to be the ultimate objective of any commercial organisation it is imperative that the management structures and the measurement systems also mirror this. In organisational terms the requirement is to create a means whereby channels (the interrelationship between actors in any chain of production, distribution and marketing of a product), markets and customers can be managed and appropriate accounting and control procedures can be implemented.

Such approaches need to be supported by accounting systems that can better identify the costs of servicing customers and hence their profitability. The problem in the past has been that traditional accounting systems have not been able to provide accurate measures of the costs involved in serving

customer or as it is called *cost-to-serve*. Using methods such as activity based costing and throughput costing, it is possible to identify the aspects of service that create cost, and hence where necessary, to modify the service package, customer by customer.

### From inventory to information

Inaccuracy of forecasts has led many to believe that they are only right by chance and that it is self-defeating to rely upon a forecast since, by definition, the degree of error embodied in it will directly influence the need for stock. Instead, if information on actual customer usage of a product could be linked directly into the channel and benefit the participants in the channel, then the need for the forecast could be much reduced.

### From transactions to relationships

One of the primary goals of many companies is market share. However, it can sometimes be the case that a blind pursuit of market share will emphasise more the winning of customers than the keeping of them. More and more, research is suggesting that the longer customers stay with us, the more profitable they become. The longer customers stay with a supplier the more they are also likely to treat it as a preferred supplier.

The trend towards customers seeking to reduce their supplier base and to move towards single sourcing is gathering speed. The benefits of such an approach include: improved quality, innovation sharing, reduced costs, integrated scheduling of production and deliveries. Underlying all of this is the idea that buyer-supplier relationships should be based upon partnership.

## Managing the supply chain of the future

A product may have been transformed more or less fundamentally on its way from the stage of raw material to the stage of end product. The chain of interrelated activities in this transformation is known by e.g. such wide concepts as value chain or supply chain or channel in a more restricted sense. Successful management of such a chain or channel is a challenge to any organisation or group of organisations working together for a common business objective. To be successful in a sustainable manner the chain must give all participants the possibility of benefiting, i.e. creating what is called *win-win* situations.

An increasing number of companies are discovering the advantages that can be gained by seeking out mutually beneficial, long-term relationships with suppliers. From the supplier's point of view, such partnerships can be formidable barriers of entry to competitors. One powerful route to developing partnership relationships is through superior logistics. Logistics

in this context becomes the thread that connects the inbound and outbound flows of channel partners.

If business transformations are to be successfully achieved, then not only must the organisation be open to change, but the skills available to it must be significantly enhanced. If the external environment is changing faster than the internal environment as one may be lead to believe, then there is a good chance that a company will soon be in trouble. Creating a climate that welcomes change should be one of the prime tasks of any business leader.

Since it is through people that change is created, attention must be paid to how the organisation develops a set of skills and competencies that are appropriate to the constantly changing external environment. The summary below suggests that the management skills and competencies needed to cope with the business transformations we have described are much broader than those traditionally encountered in the business.

| **MANAGING THE SUPPLY CHAIN OF THE FUTURE** | |
|---|---|
| **SHIFT IN FOCUS** | **SKILLS REQUIRED** |
| From functions to processes | Cross functional management and planning skills |
| From profit to performance | Understanding of the cost-to-serve and time-based performance indicators |
| From products to customers | Ability to define, measure and manage service requirements by market segment |
| From inventory to information | Information systems and information technology |
| From transactions to relationships | Relationship management and win-win orientation |

**The need for an analytic framework**

Characteristic features of leading firms have been translated into an analytic framework for strategy development for sea transport firms. Analytic frameworks are tools for identifying important challenges to a sector or a firm. They serve to highlight important issues which again open up for more focused series of questions.

We have developed an analytic framework that consists of two dimensions. Together, these two dimensions serve to identify central questions in global strategies of sea transport firms. The vertical dimension uses four categories developed in the report as the dimensions of change (product, time, space and actors). Against this dimension a horizontal dimension is drawn, consisting of what we see as three crucial strategy areas for sea transport firms.

The three strategy areas are marketing, logistics and Human Resource Management (HRM). Marketing is important as an area of strategic focus for operations and commercial opportunities. A second strategic focus is on logistics and in particular logistics networks. With increased demand for timeliness and cost reductions logistics networks are increasingly having to fine-tune respective competencies of firms. Strategic positioning, both in respect to building of distinctive competencies and connecting to central players in networks, allows for development of competitive edge. A third strategic focus is on HRM. This focus is intrinsic to any long-term strategy development. HRM strategy forms the culture of working in the firm while developing distinctive competencies for sustainable competitiveness. Together, these three strategic foci reinforce the more functionally oriented strategies linked to tonnage requirements and scheduling.

The four dimensions of change (product, time, space and actor) describe fundamental shifts in the industry. Products change in two important ways. First, they change in size and form. In the case of the automotive industry, new patterns emerge, notably as the logic of assembly of cars changes. The industry, having to combine differentiation with standardisation, resorts to the platform concept. It is quite likely that similar trends take place in other industries, because resolving the standardisation – differentiation dilemma is a global challenge to the combined pressures for efficiency and renewal of products. Second, products change in terms of materials. The automotive industry shows signs of moving from steel to aluminium, but other industries, such as food and agricultural products, also have changing needs in this respect. For example, there are changes in biological composition of food products as trends change between meat-based and cereal-based food. Changes such as these demand different conditions of transport in the way of temperature (freezing versus non-freezing temperature, for example) and humidity as well as different standards of hygiene.

The time dimension implies shortening of lead times, or rather, a larger variation in lead times. As customers demand delivery on time rather than in time, as has been common in past times, manufacturers need to adapt the lead times to the parts in question as well as to cultural variations between regions. Whatever the structure of lead time might be, transporters are obliged to respond to a larger variety of lead times coupled with a higher precision of delivery.

The space dimension reflects changes in geographical locations and corresponding changes in destinations for distribution. Related to this is the question of whether certain geographical patterns favour certain types of products. Changes in the space dimension imply that new patterns of

destinations and locations of production are emerging. Changes in the space dimension are reflected in three ways. One is the redistribution of deliveries, which moves towards mixed models and global differentiation, notably between sequence supply and batch supply. Another consists of the relocation of plants of production. A third is the expansion of new markets, which depends on changes at social and political levels.

The actor dimension embodies changes in which firms determine and influence the patterns and needs for transport. The main assembly plants are normally run by the large automobile manufacturers. These tend to be main clients for transport of finished vehicles. On the part of their suppliers, however, there is a tier-structured network where decisions concerning transport depend partly on the position that firms occupy in the network. In the case of Volvo-Ford, which was studied for this project, there is another development that is of interest. This is the seamless collaboration between the main manufacturer and first tier suppliers. A main element of this collaboration is a shared *electronic space* in which suppliers and main manufacturer work from the same plans, schedules and drawings. The electronic space, for example, allows for common car models to be developed, including parts, profiling and materials. This means that the basis for major decisions about shape, size and materials are made between first tier suppliers and the main manufacturer on a continuous (seamless) basis. The fact that collaboration becomes seamless has obvious consequences for the rate of change of models.

The elements of the framework are presented schematically in the table below.

**An analytical framework for strategy development**

| | MARKETING | LOGISTICS NETWORKS POSITIONING | HUMAN RESOURCE MANAGEMENT |
|---|---|---|---|
| THE PRODUCT DIMENSION | Address the standardisation-differentiation dilemma | Target network types through composition of fleet and competencies in the firm | Gear competencies towards product knowledge and innovation capability for transport solutions |
| THE TIME DIMENSION | Marketing of timing, and also marketing in time | Target complementarity with other firms for synchronisation, precision and flexibility | Decentralise decision structures and target recruitment procedures to ensure intelligent and responsive decision-making at functional levels |
| THE SPACE DIMENSION | Target marketing in relation to political, social and economic change in regions | Search for complementarity in software, hardware, co-ordination modes and competencies | Ensure development of intelligence units that capture political, economic and social trends |
| THE ACTOR DIMENSION | Target marketing principally at main manufacturer and first tier delivery firms | Establish longer term relationships with main manufacturer and first tier delivery firms | Aim for recruitment and development of HRM that ensures effective collaboration in different regions and with different firms |

### Further adaptation options for shipping companies

It is advisable for a shipping company to draw up its strategy for adaptation against a background of possible fragmentation of shipping services. There are several analytic tools suitable for establishing strategies, but in the report we have concentrated on the scenario technique. When the strategy has been developed, the challenge will be to innovate vigorously in the organisation.

### Fragmentation of trade and transport demand

The ongoing fragmentation of sea transport demand relates to such a varied product list as manufactures of vehicles, chemicals and cement, semi-finished iron and steel products, fertilisers and petroleum products. While these commodities only account for about 25 per cent of the volume of sea borne trade, they constitute about 80 per cent of its cost insurance freight (cif) value.

The fragmentation is shown as a tendency towards increasing numbers of cargo flows of raw materials, smaller lot/cargo sizes, less transport demand for manufactures and products, but increasing frequencies. The shipping company may have to operate as a specialised supplier of semi-finished transport services, or expand its horizon to become a fully-fledged fourth party logistics provider. New establishments, take-overs or alliances could achieve this.

The implications for tonnage requirements and transport capacities are, however, in the longer term complex and less obvious because so many influential factors are at work simultaneously apart from economic indicators as drivers. We may mention political considerations and transport policies pursued by individual countries and economic/political blocs such as the EU and developments in transport technology.

### The use of scenario analysis

The availability of scenario analysis as a tool to strategic planning facilitates taking into account the complex of potential change drivers. Scenario planning stands out for its ability to capture ranges of possibilities and their driving forces.

By identifying potential drivers such as those studied in the report company strategists may construct series of scenarios that will help to compensate for the usual errors in decision-making. In scenarios, large volumes of data may be compressed into a limited number of possible states.

The analysis explores the joint impact of various uncertainties. They are designed to bring up issues that otherwise would not be considered, by exploring the underlying forces in a sector or region – again such as those described above.

Scenarios are most effective when dealing with big issues and strategic decisions, rather than tactical decisions, and should not be used for short time planning.

### The need for new competencies

The shipping industry is a part of the transport/logistics chain, and as such the industry should evaluate the need for business models more in line with what is common in service organisations within land-based transport/ logistics and in the aviation industry. In that perspective companies need to perform appropriate HRM analyses. This assessment should be based on a value chain focus with strong attention to customers' needs and also on how the organisation can co-operate closer with organisations representing other

parts of the value chain. For some organisations this may imply a different customer perspective and changes in how to do business.

Most shipping organisations are well experienced in issues related to financial, legal and structural challenges. On the other hand, to deal only with these issues is not enough in a business climate undergoing major changes. The ability of the organisation and its human resources to implement changes is just as important. On this basis, it will be critical to develop an organisation culture and not at least a leadership culture emphasising innovation and change as a natural part of the consolidation process going on. Today, many shipping cultures could be described with the following key words: Conservative, equal to all, polite and nice. Modern leadership performance is less described and communicated. Objective consequences of over and under performance as a leader are not implemented.

It follows that the key HRM issues to address would be:

- Necessary changes in the business model of the shipping company as well as that of the trade it serves.
- The leadership role.
- Changes in organisation and management structure.
- Adjustment of the core activity and support activities.
- Evaluation of the need for other than the traditional shipping competencies, in fields such as global logistics organisation and management.

The output from such assessment should be incorporated in a HRM strategy, specific to company needs and development scenarios.

# 1 Introduction

Recent studies on development trends in international trade indicate that the shipping industry to an increasing degree will be facing organisational challenges in the future. The impacts of international trade development vary from one commodity group to another and among trade routes, but they are firmly rooted in the ongoing globalisation of industry. Shipping as the most global of all industries, is a condition for the ongoing globalisation of other industries and, therefore, intrinsically intertwined in their development.

Among the findings of the Delphi analysis that was conducted at the initiative of the Norwegian Shipowners' Association in 2000, see Minsaas, Omtvedt, Sødal and Wergeland (2000), *Fremtidig utvikling i skipsfarten og skipsfartens markeder* (The FUSS report), structural changes in the organisation of international trade were identified as important strategic conditions (drivers) for future planning in the shipping industry. The implications were that these changes would pose opportunities as well as threats for the shipowner.

Threats are due to geographical changes in cargo routing, cargo composition and delivery frequencies, as well as in changes relating to decision-making processes among shippers. These changes in decision-making processes are linked to strategies of globalisation, and the management of integrated supply chains, in which shipping companies might be forced to play minor roles.

Opportunities arise from advance knowledge of these changes, network participation or market penetration, alliance building or strategic positioning ahead of other network actors.

Thus, insight into the organisation of global trade is vital for strategic planning as well as for developing the competencies that ship owning companies will increasingly depend on.

The analyses that were recently conducted on value creation in the Norwegian maritime environments point in the same direction, see Reve and Jakobsen (2000), *Et verdiskapende Norge*. Here it was found that the lack of commercial innovation had become a restricting factor in the development of value creation. Such a lack might be rooted in insufficient insight in the organisation of global trade and shortcomings in the building of relevant manpower competencies.

The analyses within the SEAWAY 2010 programme, see SEAWAY 2010 (2001), *Utredning av forsknings- og utviklingsdrevet innovasjon i det maritime miljø*, produce more insight into global issues. In its conclusions on the need for better insight into options for strategic positioning in the shipping industry, concepts such as *networking, structural change in supply chains, access, control* and *transparency* were buzzwords.

Already quite a few concepts needing some explanation have been introduced.

This report focuses on organisational and inter-organisational issues in the global flow of goods in which a great number of actors participate. The scientific discipline most heavily engaged in studying this flow of goods is logistics. Currently the focus in logistics as well as in this report is on strategic issues. A representative definition of logistics strategy might be the following:

> *"Logistics is the process of strategically managing the procurement, movement and storage of materials, parts and finished inventory (and the related information flows) through the organization and its marketing channels in such a way that current and future profitability are maximized through the cost-effective fulfilment of orders."* Martin Christopher (1998), *Logistics and Supply Chain Management. Strategies for Reducing Cost and Improving Service.*

The definition of logistics gives transport actors a significant role in the achievement of the specified objectives of logistics.

The concept of channel used in the definition comprises the collection of activities and relations within a specific segment such as marketing in the definition above. In other contexts the concept might have been e.g. distribution channel that is a more familiar transport concept.

The chain of related activities and relationships within a given material flow - also known as a value chain - extends the logic of logistics to the wider context of inter-organisational issues. This is known as supply chain issues. This area of research has grown significantly in importance over the last couple of decades. When the focus is on strategic management as in this report, two definitions also presented in Martin Christopher (1998) might be informative. The first one relating to the management of an integrated supply chain, is the following one:

*"The management of upstream and downstream relationships with suppliers and customers to deliver superior customer value at less cost to the supply chain as a whole."*

The terms upstream and downstream relate to the focal actor in the chain. From this actor's point of view upstream is that part of the value chain connecting suppliers to the actor, while downstream relates to that part of the chain extending to the end customer. The whole chain may in the literature also be called pipeline.

Normally the business enterprises working together in an integrated supply chain are organisationally independent of each other. They have joined forces because they have some common objectives within the material flow. They may have formed networks for this purpose. Therefore, Martin Christopher (1998) has suggested a modified definition of a supply chain:

*"A network of connected and interdependent organizations mutually and co-operatively working together to control, manage and improve the flow of materials and information from suppliers to end users."*

Apart from networking, the supply chain may be under more direct control as in the case of an alliance or even under common ownership. We come back to these and other concepts in subsequent chapters.

The changes we identify concern both trading patterns in different segments of maritime transport, as well as changes in decision-making processes. It is perhaps the decision-making processes, which most significantly have impacts on the shipowners' working conditions. Most companies are usually well acquainted with the short-term conditions of their particular trades, although some long-term structural changes may be difficult to perceive. Business strategy, however, will be seriously deficient if it is not firmly rooted in knowledge on the ongoing restructuring of global trade, network building in the resultant supply chains and distributions of power in these chains.

Examples: outsourcing of global logistics by large traders shifts the responsibility of transport decisions away from trading companies themselves; shifts in sub-contractor policies by large manufacturers may limit transport decisions to fewer and new industrial participants.

There is thus sound reason to investigate the impacts on the shipowner of changes in organisational patterns in international trade. Such an insight will give important strategic knowledge not found in the great mass of macro

economic analyses that are basic to forecasts of trade composition, volumes and routing of commodities.

The strategic insight gained creates needs for new competence among the staff of shipping companies and new training programmes for them. Focus will be on recruitment, motivation and management of human resources. The guiding principles can be studied under the heading Human Resource Management (HRM).

This report identifies conditions in global trade that have strategic implications for the shipowner. In chapter 2 we focus on the significance of global trade on the actors in the supply chain without drawing any particular attention to the shipowner. In chapter 3 we take a closer look at one very important industrial segment (the automotive industry). In chapter 4 threads are drawn from the previous chapters to organisational and management issues in shipping in the wake of trade globalisation. Implementation strategies are sketched for shipping.

The report presents an in-depth study on dimensions of change among industrial firms in the automotive industry. This sector was selected firstly because it conditions an important segment of sea transport. Secondly, it poses challenges to transport services by being a global industry serving a differentiated customer market. The assumption behind the analysis has been that in order to understand future options, sea transport firms need to understand what is going on in global industries such as the automotive industry. Conclusions although founded on a specific case, have tentatively been generalised.

# 2 Global of trade and supply chain management

When writing this chapter we acknowledge the intellectual impact from four publications: Martin Christopher (1998), *Logistics and Supply Chain Management. Strategies for Reducing Cost and Improving Service*, Donald Waters (editor) (1999), *Global Logistics and Distribution Planning*, and two theses written at The Norwegian School of Management BI in the autumn of 2002: Nordsti, Heggelund, Eidem (2002), *Wallenius Wilhelmsen Lines. Future Supply Chain for WWL. A Scenario Analysis* and Kjellsen, Sigernes, Steimler (2002), *Tankers International & Supply Chain Management. A Management Philosophy and Tool for a Crude Oil Transporter*.

## 2.1 Setting the stage

World trade has for years grown faster than Gross Domestic Product (GDP) in many countries and seemingly will continue to do so for the foreseeable future. Driving forces behind this strong growth in world trade can be summarised under a few headings.

*Growing demand in new markets:* Many regions of the world are becoming more prosperous and are consuming more goods. Currently one of the fastest growing economies is to be found in the People's Republic of China with more than 1.2 billion inhabitants.

*Manufacturers aim at economies of scale:* There have been significant changes in manufacturing operations aiming at large-scale production. The best size for these facilities may be larger than the demand from a home market can cater for.

*Specialised support operations:* There is a trend for organisations to concentrate on their core competencies and outsource other operations to specialists. Large-scale production, for example, needs the support of nearby focused factories. These support operations have to take place in locations dictated by their customers, and these can be located in foreign countries.

*Greater demands on suppliers:* Customers are demanding more from suppliers - including just-in-time operations, total quality, strategic alliances, customisation, etc. Local suppliers may not be able to meet these demands, and organisations may have to look further afield to find the best sources.

*Removal of trade barriers:* One of the major forces towards global free trade was the General Agreement of Tariffs and Trade (GATT), now the World Trade Organisation (WTO). Countries in several regions have taken this idea further to create free trade areas, including the European Union (EU) and the North American Free Trade Area (NAFTA).

*Integration of the supply chain:* Current logistics view the supply chain in the context of an integrated set of actions rather than a set of distinct functions. This kind of integration may result in a smooth movement of goods from initial suppliers through to final customers.

*Changing operations in logistics:* Development in transport has made trade both more effective and efficient. The technological development of transporting goods in containers, known as *containerisation* may be cited as an example. Similarly, *postponement* allows products to be finished at a later point in the supply chain, and this gives companies flexibility to change products and respond better to customised demands.

*Improved communications among customers:* Satellite television, the Internet and other developing communication channels have made customers more aware of products from outside their local regions.

*Revolution in information and communication technology (ICT):* The huge development in information systems - ranging from electronic data interchange (EDI) to satellite links to vehicles and teleconferencing in the office - are fundamentally changing the way that organisations work and allow more flexible operations than before.

As the barriers to global movement have come down so have the sources of global competition increased. Newly emerging economies are building their own industries with global capabilities. At the same time, technological change and production efficiencies mean that most companies in most industries are capable of producing in greater quantity at less cost. The result is that there is now over-capacity in virtually every industry so that competitive pressure is greater than ever before.

To remain competitive in this new global environment, companies will have to continually seek ways in which costs can be lowered and service enhanced. The result is that supply chain efficiency and effectiveness will become ever more critical.

## 2.2 Moving from national to global enterprise

International trade does not necessarily lead to international companies, but practice shows that this is a trend at present. Today, major firms have a significant and growing presence in business outside their country of origin. Perhaps half the trade among industrialised countries is carried out by subsidiaries of the same mother company. In developed countries this is particularly noticeable, with a third of exports from the United States (US) being products sent by US companies to their overseas subsidiaries, and another third being products sent by foreign manufacturers back to their home market.

Many factors encourage an organisation to work internationally, but the company does not have to be international itself to create a presence in international markets. A manufacturer can meet foreign demand organisationally in five traditional ways:

- Licensing to or franchising with local manufacturers.
- Exporting finished goods to local distributors.
- Setting up a local distribution network and exporting to it.
- Exporting parts and using local assembly and finishing - often seen as postponement.
- Starting full local production.

Each of the five alternatives clearly put different demands on the supply chain. Developing strategies in this area are notoriously complicated and depend on a variety of factors, ranging from the long-term strategy of the company to the features preferred by individuals in the local market. Such decisions need a clear appreciation of the balance of costs between manufacturing and distribution. They must also fit into the general structure of the organisation, and this means choosing to work nationally, internationally, multi-nationally or globally.

- National companies only operate within their home market, sending exports to other organisations in foreign countries.
- International companies are located primarily in one country from where they control the activities of subsidiary divisions working in other countries.
- Multi-national companies have loosely linked, largely independent companies working in different geographical regions, often adjusting products to local needs.
- Global companies see the world as a single market for the same product, and use sources for production purposes from whatever area they find

profitable and have operations in the locations where they can work most effectively and efficiently.

Although the distinctions sketched above can be fairly arbitrary, they still describe an underlying reality. There can be obvious advantages from operating globally, as it normally ensures economies of scale, removes duplicated functions and operations, simplifies management structures, concentrates research and development, simplifies the designing of products and processes, ensures that operations are in the best locations and so on. Ideally, then, organisations may decide on global operations, with their efficient global operations and single, seamless market and organisation.

We have already stated that shipping is a global industry. Insight into the scale of international activities of shipping companies can be found in Ellen Maren Dalland's publication from 1990: *Norske rederiers multinasjonale virksomhet. Et studium av omfang og sammensetning av multinasjonal virksomhet hos norske rederier.*

In developing a global logistics strategy a number of issues arise which may require careful consideration. In particular what degree of centralisation is appropriate in terms of management, manufacturing and distribution and how can the needs of local markets be met simultaneously with the achievement of economies of scale through standardisation.

Three of the ways in which business have sought to implement their global logistics strategies have been through focused factories, centralised inventories and postponement.

### Focused factories

The idea behind the focused factory is simple: by limiting the range and mix of products manufactured in a single location the company can achieve considerable economies of scale. Typically the nationally oriented business will produce the full range of products for sale in the home market. On the other hand the global business will treat the world market as one market and will rationalise its production so that the remaining factories produce fewer products in volumes capable of satisfying perhaps the entire market.

### Centralised inventories

Globalisation has encouraged companies to rationalise production into fewer locations. This has led to a trend towards the centralisation of inventories. Making use of the well-known fact that consolidating inventory into fewer locations can substantially reduce total inventory requirement, organisations have been steadily closing national warehouses and amalgamating them into

regional distribution centres (RDCs) serving a much wider geographical area.

Even greater gains than achieved by centralisation can be obtained by not physically centralising the inventory but rather by locating it strategically near the customer or the point of production but managing and controlling it centrally.

Many organisations are now recognising the advantage of managing world-wide inventories on a centralised basis. To do so successfully, however, requires an information system that can provide complete transparency of demand from one end of the pipeline to another in as close to real time as possible. Equally, such centralised systems will typically lead to higher transport costs in that products inevitably have to move greater distances and other high cost air express will be necessary to ensure short lead times for delivery to customer.

### Postponement

How is it possible to reconcile the need to meet local requirements whilst seeking to organise logistics on a global basis? Ideally organisations would like to achieve the benefits of standardisation in terms of cost reduction whilst maximising their marketing success through localisation.

One strategy that is increasingly being adopted is the idea of postponement. Postponement, or delayed configuration, is based on the principle of seeking to design products using common platforms, components or modules but where the final assembly or customisation does not take place until the final market destination and/or customer requirement is known.

The advantages of a postponement strategy are several. Firstly, inventory can be held at an earlier stage in the value chain - at what is called a generic level so that there will be fewer stock-keeping variants and hence less inventory in total. Secondly, because the inventory is generic, its flexibility is greater, meaning that the same components, modules or platforms can be embodied in a variety of end products. Thirdly, forecasting is easier at the generic level than at the level of the finished item. This last point is particularly relevant in global markets where local forecasts will be less accurate than a forecast for worldwide volume. Furthermore the ability to customise products locally means that a higher level of variety may be offered at lower total cost - this is the principle of mass customisation.

## 2.3 Logistics and supply chain issues

As companies have extended their supply chains internationally they have been forced to confront the issue of how to structure their global logistics organisation. In their different ways these companies have moved towards the same conclusion: effectiveness in global logistics can only be achieved through a greater element of centralisation.

Clearly there will still be many areas where local decision-making will be preferable, for example sales strategy and, possibly, promotional and marketing communications strategy. Likewise the implementation of global strategy can still be adjusted to take account of national differences and requirements.

How can the appropriate balance of global versus local decision-making be achieved in formulating and implementing logistics strategy? A number of general principles are emerging:

- The strategic structuring and overall control of logistics flows must be centralised to achieve worldwide optimisation of costs.
- The control and management of customer service must be localised against the requirements of specific markets to ensure that competitive advantages is gained and maintained.
- As the trend towards out-sourcing everything except competencies increases, then so does the need for global co-ordination.
- A global logistics information system is the pre-requisite for enabling the achievement of local service needs whilst seeking global cost optimisation.

If the potential trade-offs in rationalising sourcing, production and distribution across national boundaries are to be achieved then it is essential that a central decision-making structure for logistics should be established. Many companies that are active on an international basis find that they are constrained in their search for global optimisation by strongly entrenched local systems and structures. Only through centralised planning and co-ordination of logistics can the organisation hope to achieve the twin goals of cost minimisation and service maximisation.

An example: Location decisions are a basic determinant of profitability in international logistics. The decision on where to manufacture, to assemble, to store, to tranship and to consolidate can make the difference between profit and loss. Because of international differences in basic factor costs and because of exchange rate movements, location decisions are fundamental.

Also these decisions tend to involve investment in fixed assets in the form of facilities and equipment. Decisions taken today can therefore have a continuing impact over time on the company's financial and competitive position.

As the trend towards global manufacturing continues, organisations will increasingly need to look at location decisions through some sort of total cost analysis. The requirement is for improved access to activity-related costs such as manufacturing, transportation and handling. Accurate information on inventory holding costs and the cost/benefit of postponement also becomes a key variable in location decision.

The opportunities for reducing costs and improving throughput efficiency by a reappraisal of the global logistics network, and in particular manufacturing and inventory locations, can be substantial. By their very nature, decisions on location in a global network can only be taken centrally.

Because local markets have their own specific characteristics and needs there is considerable advantage to be achieved by shaping marketing strategies locally - although within overall global guidelines. This is particularly true of customer service management where the opportunities for tailoring service against individual customer requirements are great. The management of customer service involves the monitoring of service needs as well as performance and extends to the management of the entire order fulfilment process from order through delivery. Whilst order fulfilment systems are increasingly global and centrally managed, there will always remain the need to have strong local customer service management.

As we have previously noted, one of the greatest changes in the global business today is the trend towards out-sourcing. Not just out-sourcing of services that traditionally have been provided in-house. The logic of this trend is that the organisation will increasingly focus on those activities in the value chain where it has a distinctive advantage - the core competencies of the business - and everything else it will out-source. This movement has been particularly evident in logistics where the provision of transport, warehousing and inventory control is increasingly subcontracted to specialists or logistics partners.

To manage and control this network of partners and suppliers requires a blend of both central and local involvement. The argument once again is that the strategic decisions need to be taken centrally with the monitoring and control of suppliers´ performance and day-to-day relationship with logistics partners being best managed at a local level.

The management of global logistics is basically the management of information flows. The information system is the mechanism whereby the complex flows of materials, parts, subassemblies and end products can be co-ordinated to achieve cost-effective service. Any organisation with aspirations to global leadership is dependent upon the visibility it can gain of materials flows, inventories and demand throughout the pipeline. Without the ability to see down the pipeline into end user markets, to read actual demand and subsequently to manage replenishment in virtual real-time the system is doomed to depend upon inventory. To substitute information for inventory has become something of a cliché but it should be a prime objective nevertheless. Time lapses in information flows are directly translated into inventory. The great advances that are being made in introducing *quick response* logistics systems are all based upon information flow from the point of actual demand directly into the supplier's logistics and replenishment systems. On a global scale we typically find that the presence of intervening inventories between the plant and the market place obscure the view of real demand. Hence the need for information systems that can read demand at every level in the pipeline and provide the driving power for a centrally controlled logistics system.

The implementation of global pipeline control is highly dependent upon the ability of the organisation to find the correct balance between central control and local management. It is unwise to be too prescriptive but the experience that global organisations are gaining every day suggests that certain tasks and functions lend themselves to central control and others to local management. The table summarises some of the possibilities.

| Global co-ordination and local management | |
|---|---|
| Global | Local |
| ● Network structuring for production and transportation organisation | ● Customer service management |
| ● Information systems development and control | ● Gathering market intelligence |
| ● Inventory positioning | ● Warehouse management and local delivery |
| ● Sourcing decisions | ● Customer profitability analyses |
| ● International transport mode and sourcing decision | ● Close relationship with local sales and marketing management |
| ● Trade-off analyses and supply chain cost control | ● Human Resource Management (HRM) |

## 2.4 Characteristics of leading companies

In the logistics terminology companies performing at the forefront are denoted companies at the *leading edge*. It may easily be misleading to summarise characteristics of such companies, but Martin Christopher (1998) has done so in a rather convincing way.

The challenge to every business is to become a *responsive* organisation in every sense of the word. The organisation must respond to changes in the market with products and services that provide innovative solutions to customers' problems; it must respond to volatile demand and it must be able to provide high levels of flexibility in delivery.

What will be the distinguishing features of the responsive organisation? There will be many differences but the major transformation will probably be:

- From functions to processes.
- From profit to performance.
- From products to customers.
- From inventory to information.
- From transactions to relationships.

To consider each of these in turn:

### From functions to processes

Conventionally, organisations have been vertical in their design. In other words businesses have organised around functions such as production, marketing, sales and distribution. Each function has had clearly identified tasks and within these functions there is a recognised hierarchy up which employees might hope to progress.

The problem with this approach is that it is inwardly focused and concentrates primarily upon the use of resources rather than upon the creation of outputs. Paradoxically, the achievement of these outputs can only be made by co-ordination and co-operation *horizontally* across the organisation. These horizontal linkages mirror the materials and information flows that connect the customer with the business and its suppliers. They are, in fact, the *core processes* of the business. In the horizontal organisation the emphasis is upon the management of processes. These processes, by definition, are cross functional.

The justification for this radically different view of the business is that these processes are in effect capabilities and it is through capabilities that the organisation competes. In other words the effectiveness of the new product

development process, the order fulfilment process and so on, determines the extent to which the business will succeed in the market place.

### From profit to performance

Whilst there can be no arguing that long-term sustained profit has to be the goal of any commercial organisation, there is a growing realisation that if profit is the end, then we should spend more time examining the means whereby it is achieved. In this context we are concerned with performance and performance indicators both in the organisation and in the supply chain. Through the choice of performance measurement the behaviour can be determined. Thus, in a market place where employees are required to clock in and out of work each day, punctuality may be improved but their willingness to work more than the agreed hours may be reduced and the motivation to make innovations may be negatively influenced. Hence the importance of understanding what the critical performance criteria are and therefore what should be measured.

The underlying logic of this viewpoint is that performance drives profitability. Therefore, if we get the right performance then profit will follow.

Many of these new performance indicators will be non-financial. That is, they will focus management's attention upon such things as customer satisfaction, flexibility and employee commitment.

### From products to customers

Even though focus on the customer has gained widespread acceptance across industry, there is still an underlying tendency to manage products rather than customers. This emphasis is reflected in accounting systems that can provide precise information on product profitability but that are incapable of measuring the profitability of customers.

Because customer satisfaction has to be the ultimate objective of any commercial organisation it is imperative that the management structures and the measurement systems also mirror this. In organisational terms the requirement is to create a means whereby markets, channels and customers can be managed and appropriate accounting and control procedures can be implemented. Demand Management is emerging now in some leading-edge companies as an integrating, cross functional approach to servicing customers.

Such approaches need to be supported by accounting systems that can better identify the costs of servicing customers and hence their profitability. The

problem in the past has been that traditional accounting systems have not been able to provide accurate measures of the *cost-to-serve*. Now, using systems such as activity based costing and throughput costing, it is possible to identify the aspects of service that create cost, and hence where necessary, to modify the service package, customer by customer.

### From inventory to information

Inaccuracy of forecasts has led many to believe that they are only right by chance and that it is self-defeating to rely on a forecast since, by definition, the degree of error embodied in it will directly influence the need for stock. So this might be an argument in favour of substituting inventory with information. However, if information on actual customer usage of a product could be linked directly into the logistics system, then the need for the forecast could be much reduced.

### From transactions to relationships

One of the primary goals of many companies is market share. However it can sometimes be the case that a blind pursuit of market share will emphasise more the winning of customers than the keeping of them. What matters is not so much the absolute level of market share but rather the quality of it. In other words, does our market share comprise a large number of customers who might easily be prepared to drift away from us? Alternatively, are the majority of our customers loyal and committed to us as a supplier?

More and more, research is suggesting that the longer customers stay with us, the more profitable they become. The longer customers stay with a supplier the more they are likely to treat it as a preferred supplier. The trend towards customers seeking to reduce their supplier base and to move towards single sourcing is gathering speed. The benefits of such an approach include: improved quality, innovation sharing, reduced costs, integrated scheduling of production and deliveries. Underlying all of this is the idea that buyer-supplier relationships should be based upon partnership.

An increasing number of companies are discovering the advantages that can be gained by seeking out mutually beneficial, long-term relationships with suppliers. From the supplier's point of view, such partnerships can prove formidable barriers of entry to competitors. One powerful route to developing partnership relationships is through superior logistics. Logistics in this context becomes the thread that connects the inbound and outbound flows of channel partners.

If these business transformations are to be successfully achieved then not only must the organisation be open to change, but the skills available to it must be significantly enhanced.

If the external environment is changing faster that the internal environment as one may be lead to believe, then there is a good chance that a company will soon be in trouble. Creating a climate that welcomes change should be one of the prime tasks of any business leader.

Since it is through people that change is created, attention must be paid to how the organisation develops a set of skills and competencies that are appropriate to the constantly changing external environment. The summary below suggests that the management skills and competencies needed to cope with the business transformations we have described are much broader than those traditionally encountered in the business.

Fundamental to the development of lasting relationship in business is a high degree of trust. The conditions for developing trust were an important part in the thesis by Kjellsen, Sigernes, Steimler (2002), *Tankers International & Supply Chain Management Philosophy and Tool for a Crud Oil Transporter.*

| Managing the supply chain of the future | |
|---|---|
| Shift in focus | Skills required |
| From functions to processes | Cross functional management and planning skills |
| From profit to performance | Understanding of the cost-to-serve and time-based performance indicators |
| From products to customers | Ability to define, measure and manage service requirements by market segment |
| From inventory to information | Information systems and information technology |
| From transactions to relationships | Relationship management and win-win orientation |

# 3 Dimensions of change in the automotive industry

## 3.1 Introduction

This chapter aims at analysing structural changes in industrial firms that influence demands for sea transport. We use the findings from the project to discuss questions that might be addressed by sea transport firms. A scientific paper addressing structural changes in automotive supplier firms is under preparation at the Norwegian School of Management BI (Hernes and Kuvaas, forthcoming). This chapter is based on studies carried out for the scientific paper, but also on a study carried out by Bo Terje Kalsaas under the project (Kalsaas (2001)), as well as a number of interviews, reports and publications from other studies. Global industries undergo changes to customer responsiveness, seamless processes, global competition, continuous product and process development and selective collaboration. Sea transport firms may not feel the heat of such changes the same way that industrial firms do. However, industry constitutes the bulk of the customer base for sea transport firms, and the changes felt by industries today are likely to affect sea transport firms in turn.

Changes taking place are highly complex and multiple, and rather than try to pursue singular changes, we have chosen to focus upon what we see as four *dimensions* of change. We have selected the dimensions that seem most likely to affect sea transporters. They are:

- the product dimension,
- the time dimension,
- the space dimension,
- the actor dimension.

It is first and foremost a qualitative report rather than a quantitative one. Where we refer to hard facts it is in the form of examples used to illustrate our points. Thus the report is on purpose more exploratory than factual, the aim being to *discuss* trends of change in the automotive industry that are likely to influence the needs for sea transport. Trends such as these offer insights that enable us to broaden and deepen our understanding of underlying forces in current development. The future can be best understood by understanding what is going on in the industry. What seems today to be emerging as a change is a fact tomorrow that is translated into concrete needs among industrial firms. This is why changes cannot just be assessed,

but they also need to be interpreted. What are sometimes faint signals of change today may well become tomorrow's reality.

## 3.2 Why focus on the automotive sector?

The study leading up to the report has concentrated on the automotive industry, which, including the relevant upstream and downstream transport volumes accounts for a very considerable share of world seaborne trade. A major feature of the automotive industry is that it operates with products and production processes with a rather unique combination of high-volume, high-value and high-flexibility products and processes compared to other industries (Larsson (1999)). Ashley (1995) appropriately refers to this as high-value, time-sensitive goods that need quick but not necessarily next day delivery on a high reliable basis. This does not make it representative of industry as a whole. However, because it constitutes a particularly flexible, competitive and customer-driven sector, it serves as a good illustration of changes that are present in other industries, but which are less noticeable. Nevertheless, being less noticeable does not mean being unimportant. As we point out below, a current trend among sea transport firms is an increasingly fierce competition. In a world of fierce competition gaining and sustaining competitive advantage is increasingly about attending to things that are nor readily noticeable.

Further, it is possible that the automotive sector is in some sense a precursor for other industries, and a study may address questions that become relevant for other industries in the future. The automotive industry does, as Larsson (1999) points out, play a leading role in the implementation of new strategies for supplier restructuring. Nevertheless, we acknowledge that the trends pointed out by development in the automotive industry will correspond to a varying extent to those of other industries. Other entities have greater lead times and depend less on market demand variations. An entirely different type of industry, that of raw material process industries, differ from the automotive industry by transforming a continuous and largely predictable flow of produce.

Still, as we suggest above, the automotive industry serves as useful example of industrial change exactly because it is a challenging industry, and at the same time an indispensable industry to sea transporters for years to come.

## 3.3 Challenges of transport firms

At least four developments are at present noticeable among sea transport firms concerning their ability to relate to their customers in industry in order to gain competitive advantage.

Some sea transport firms are beginning to open up to customers' concerns, notably customers' concerns about closeness, accessibility and openness of communication. For example, in the past months a number of sea carriers have formed on-line facilities permitting them to keep continuous dialogue with their customers via the Internet (Logistics Management and Distribution Report (2001)). This can help reduce cycle times, cut costs and help gain competitive advantage. According to our own interviews, Volvo Car Corporation opened their on-line logistics system to transporters in 2001. Sea transport firms still have progress to make in improving the communication with their customers, thereby opening up for new ways of performing sea transport in a better way for the customer. Innovation and optimisation are often achieved in collaboration with those who are burdened with the problem.

Competition between sea transport firms will get tougher as economic downturns are expected to force firms to cut costs (Gooley (2001)). This means a harder battle for customers, which is won largely by those, not only better able to offer low rates, but also able to offer services responding to customers' needs, actual and future.

Customers of sea transport express increasingly needs for high quality (speed and safety) and differentiated services. New logics of production based on just-in-time principles, customer responsiveness and flexible manufacturing put additional pressure on the present transportation infrastructure (Jennings and Holcomb (1996)) where damage and delays are very costly to the customer. Needs are also becoming increasingly differentiated over time and space. Together, these two developments converge towards customer needs for seamless transport where the transport system responds to changes and leaves no glitches in the overall logistics of moving from production to market (Fabey (1997)).

Industrial firms become increasingly aware of their responsibilities and image in an increasingly mediatised society. Automotive manufacturers, cultivating the power of the brand as much as the technology itself, place increasingly importance on environmental and safety factors. Our own interviews with Volvo, for example, confirm that not only are they

concerned with the environmental quality of their vehicles, but also of the production and distribution processes, including transport.

These factors together suggest that it is crucial to monitor not only customers' concrete needs, but also their wider concerns. We distinguish between needs on the one hand and concerns on the other hand. We will return to the distinction between needs and concerns towards the end of the chapter where we synthesise the discussion into a summary table.

Responding to needs means responding to what the customer asks for. However, this means only the needs of which the customer is explicitly aware. Customers have needs of which they may not be aware. Concerns, on the other hand, are less tangible than needs and cannot always be readily assessed. For example whereas a concrete need may be to have a good transported from port A to port B, a concern may be to have access to integrated services that minimise costs and ensure safer transport from plant A to plant B. A yet wider concern may be to develop trustful relationships with the transporter ensuring that future transport needs are understood, yet met at competitive cost to the customer. The former may be a priority while the latter may be a wish.

The difference between needs and concerns implies a difference in interpretation and analysis. Whereas needs may be assessed directly, concerns need to be interpreted. Whereas customers' needs may be assessed through surveys and day-to-day contact, to come to an understanding of their concerns demands a concerted effort of analysis and reflection. It demands that one penetrates the facade of day-to-day operations and deciphers cues that connect to underlying changes in the industry.

Changes among industrial firms take place along various dimensions, each of which mirrors potential concerns that might well become tomorrow's needs. We will in the following explore four distinctly different dimensions of change among industrial firms, all of which in some way or other influence demands for sea transport:

The *product* dimension reflects changes in products, such as influences of new technologies and materials. It also reflects changes in the composition of products, such as trends from single component transport to transport of composite systems.

The *time* dimension reflects changes in frequency of delivery and evenness of transport demands. It also reflects how often changes in products (size) and distribution patterns might be expected.

The *space* dimension reflects changes in geographical locations and corresponding changes in destinations for distribution. Related to this is the question of whether certain geographical patterns favour certain types of products.

The *actor* dimension reflects changes in the type of companies among industrial firms that are likely to be interesting customers for sea transport.

## 3.4 Dimensions of change among industrial firms, and some implications

### 3.4.1 The product dimension

For most of the 20th century, the basic products that went into car making changed very little in substance, while new products, e.g. electronics, abound. Accelerated pressure for environmental protection together with considerable advances in technological development is influencing product changes in two major ways: *Changes in product size and form: the platform principle* and *Changes in materials: e.g. aluminium.*

*Changes in product size and form: the platform principle.* Two trends are taking place concurrently, which are paradoxical, yet closely connected. Corporate mergers are being carried out in order to cut cost through streamlining of operations and rationalising. Merging means that companies integrate several levels of manufacturing with one another, i.e. converging on similar principles of production and management.

The paradoxical development is that to exploit fully the market potential for separate branding, merged companies seek to retain sufficient distinction between the respective makes. For example, in the Ford-Volvo merger Volvo may be concerned that the distinctive Scandinavian traits of Volvo cars are maintained. This apparent dilemma between standardisation and distinctiveness is resolved through the use of platforms. A platform is a standard basis for cars of different makes which standardised many parts while allowing for some variation. Muffatto (1998), who studied changes in the Japanese automobile industry, defines platforms rather broadly as a *"relatively large set of a product's components that are physically connected as a stable sub-assembly"*. Platforms allow for standardisation at a certain level of manufacturing while opening up for variations at another level. For example, an automotive manufacturer might produce 15-20 models while relying on 3-4 standard platforms. The reduction in the

number of platforms is drastic. VW, for example, reduced the number of platforms from 16 to 4 during the 1990s (Meyer (2000)).

According to our information, Volvo has the same platform for all its models. This means that compared to the past there may be more standardised products for shipment but at the same time more varied products. There is more standardisation of products that does not influence the distinctiveness of the car as compared to other makes in the same category. This is done from the necessity to keep production costs down.

An important side effect of platforms which influences transport patterns is that parts can increasingly be imported from suppliers worldwide. A Volvo factory in Sweden, for example, is able to import platforms from suppliers in other parts of the world thanks to greater standardisation through platforms. It means also, on the other hand, as Volvo shares platforms with Ford, that Swedish suppliers will be able to export platforms to Ford assembly plants outside Sweden. Volvo's strategy is to be able to switch production easily between the assembly plants at Torslanda and in Ghent (Belgium). The objective of industrial firms is to be able to switch instantaneously in order to achieve a seamless reality of production and logistics. This has obvious logistical consequences for transport. If a plant chooses to switch to other suppliers, it becomes a question whether there is appropriate offer of transport to respond to the change in time. It is worth noting that for the time being, this change is not a clearly distinguishable trend. Interviews in Volvo suggest that in practice firms with geographical proximity to the main plants are more likely competitors than firms far away. For example, it is not likely that Asian firms can compete with European firms for delivery in Europe. However, the change that is taking place is a shift from West European to East European firms. The possibility for firms to compete in markets further away relates to transport costs, which again depend on the ability of sea transport firms to come up with less costly solutions. Therefore, the scenario of companies relatively far removed from assembly plants signalling needs for sea transport is one to be reckoned with.

*Changes in materials: e.g. aluminium*. An increasing trend in the 1990s has been to use more aluminium components in cars (Ashley 1994). Aluminium, while more expensive than steel, offers advantages of weight. This is a trend, which is partly driven by ecological concerns prompting increases in taxes on fuel. In order to keep car performance at acceptable levels at lower fuel consumption, the weight is reduced by replacing steel with aluminium. It is yet uncertain how far the aluminium revolution will go, as it is not quite clear how steel and aluminium compare on questions of reparability, cost

and manufacturability. However, it is no doubt that it is a factor to count with.

A development such as this is not confined to just the transport of a new weight of parts. It can be expected to have additional consequences for the needs for sea transport. Two consequences may be highlighted in the example of aluminium:

1. An increased proportion of aluminium parts will affect the demand for aluminium raw materials, which again increases the demand for bulk transport. Such an increase will come about as a consequence of a demand in the automotive sector, and can be predicted on the basis of understanding the material changes that are taking place in the automotive sector.

2. Aluminium differs from steel in that it is more disposed towards recycling. A trend towards a more environment friendly society with corresponding changes in environment taxation is thus conducive to a change in materials. Apart from influencing the type of materials used in automotive production, recycling opens up for new transport needs of recycled materials. In sum, the example of aluminium directs our attention to three implications of technological change. First, the direct effect; the change in the type of materials to be used. Second, the changes in raw materials caused by the trend, and the corresponding transport needs. Third, the implications for transport of recycled materials.

Changes such as those mentioned here are mere examples. But as examples they highlight the following:

1. Changes in demands for transport emerge from deeper changes in society, which are translated into variations in products and technology. We have mentioned the concern with the environment as a factor here, which influences taxation that again influences size and weight of components (smaller size components allows for lower fuel consumption at similar performances). Such changes, although rooted in a broader social context, transit via changes in production principles. This means that an understanding of changes in production firms may enable understanding of wider future changes having implications for sea transport.

2. Changes in choice of materials have possible consequences for other demands for sea transport, such as raw materials and recycling/waste.

This means that the analysis of future needs to carefully explore wider consequences than just a change in needs for transport of the end product.

3. Assessments of possible changes need to be sensitive to early tendencies. Changes in materials take place more rapidly than before, as automotive manufacturers typically operate with much shorter cycles of design changes, and these cycles keep getting shorter as competitive advantage lies in the time it takes for new ideas to reach the market in the form of a end product. This is what is commonly referred to as *Concept to customer lead time*. It means that prospective sea transport firms, in order to adapt to the changes, need to be sensitive to early signals in order to have the necessary lead time for developing offers of transport.

### 3.4.2 The time dimension

The aspect of time is present in different forms. Some frequencies of delivery become noticeably higher. However, this is but one aspect that is changing. Of essence for automotive firms is lead times; i.e. the time taken from order to delivery. We see that lead times are shortening as a result of just-in-time logistics in manufacturing and increasing awareness of the importance of customer responsiveness.

The direct lead times from order to delivery are not the only lead time that is of importance. Concept to customer lead time (explained above) is the time in which changes may occur of the use of materials in manufacturing. While the direct lead time related to responsiveness, speed and precision, the latter type relates to the ability of transport firms to restructure their services in response to new concepts for models.

New concepts and models are facilitated by the larger degree of integration between vehicle manufacturers and their suppliers where suppliers to an increasing degree take part in the design of future vehicles. Our data suggest that for suppliers, when they become more closely integrated with the design, possibilities open up for use of new materials that lie within their expertise. The importance of precision is particularly great in regions where vehicles are made to customer's specification and where little space is available to stocks.

Finally, but perhaps most importantly, is the point of variations in the time dimension. The variation in time changes over time. It is, for example, a feature of car sales that demand is seasonal. There is normally a large peak

in the spring and a smaller peak in the autumn. Whereas peaks were evened out before the appearance of just-in-time production, variations in demand are now followed by variations in production output and corresponding variations in needs for transport. The time aspect varies also in space. For example, in regions where vehicles are manufactured to customer's specifications, vehicles, and by consequence parts, are only delivered when ordered by the main assembly plant. When the main plant does not work, nor do the suppliers. This "accordion" logic poses its particular demands on the adaptability of transport firms.

The lead-time from order to delivery has been considerably reduced over the past years. A question is whether the downward trend will continue. Is, for example, a lead time of one week possible in the foreseeable future? Our interviews suggest that the limit in lead time is not necessarily fixed by technical limitations. According to Volvo, the limit is not so much technical, but social. Volvo had a vision in the mid 1990s to produce the *2-week car*, but abandoned it (at least temporarily) to stay with a four weeks lead time. Experience has shown that once the decision is taken by a family to buy a car, family members become more active in influencing the decision about what options to choose than they were before the decision was taken. Consequently a number of orders are modified after the order has been placed, and the modifications are made some time after the initial order.

Being able to gain and keep competitive edge is largely about getting new and attractive concepts to the market as fast or faster than the competitors. This is the reason why automotive manufacturers have concentrated efforts in recent years on reducing drastically the concept to customer lead time. Our own interviews with component manufacturers to leading automotive manufacturers suggest that the concept to customer lead time is being reduced considerably compared to earlier times. Our interviews were carried out in Scandinavia, but a similar trend takes place in the U.S. Eisenstein (1999) points out that the current trend at General Motors is to cut concept to customer lead time to 18 months. A decade ago it ran as high as five years.

Implications may not be crucial to sea transport firms if changes are relatively modest, such as smaller modifications of shape or weight. They are considerably greater if in the space of 18 months decisions are made to use different materials. We have pointed out above that the use of some materials is changing, citing aluminium as an example, and apart from the direct implications of changing weights and shape, it has wider implications for bulk transport of raw materials and recycled materials. This means that drastic shortening of concept to customer lead time allows less time for sea transport firms to restructure their offer. A change in concept to customer

lead time from, say, 5 years to 18 months, may have serious implications for the time available to restructure offers of sea transport.

### 3.4.3 The space dimension

The space dimension implies the geographical changes taking place in the automotive industry that are likely to influence needs for sea transport. We distinguish between three different patterns in space. *Redistribution* implies an overall change of localisation of production to suit market needs in relation to provision of products and materials. *Relocation* implies setting up of new production plants in response to concrete changes in technology or market. *Expansion* implies extension of production in new markets.

There are, grossly speaking, two logics of supplier logistics to automotive plants, each of which relies on a different system of transport. The distinction is between sequence supply and batch supply. Sequence Logistics Suppliers (SELS) are located in the vicinity of the assembly plant, often in industrial parks, and operate on lead times of 4 hours and less. Batch supply operates with much greater lead times that allow for long distance transport, mainly undertaken by sea transport firms. Whereas sequence supplies stand for approximately 75 per cent of the volume of what makes up a car, batch supplies represent the remaining 25 per cent.

There are regional differences in how the logistics are evolving, and the differences relate to priorities of the end customer. In Europe and partly in Japan, manufacturers tailor make cars to customers' needs and tastes with approximately four weeks lead time. To be able to do this, they operate with mixed models of sequence supplies and batch supplies. The mix is done to obtain optimal utilisation of different suppliers and transport modes. Transport with longer lead times, for example, allows in principle for switching between both different suppliers and different transporters. In the U.S., however, end customer tend to want to pick a car and drive off with it on the same day and are less concerned with having a car produced especially for the individual. Accordingly, dealers will tend to build up stocks, whereas in Europe, for example, stocks are minimal or non-existent. An implication is that the balance between sequence supplies and batch supplies, which concerns transport firms, is not necessarily driven by what is technologically feasible, but also by the end customer’s values. The underlying forces are partly sociological and given to trends. A question is how quickly such values change and what makes them change.

The automotive industry is an industry with strong traditions, both technologically and sociologically. Demands for seamless production and distribution, extreme demands for quality standards and entirely new work methods challenge several aspects of traditional manufacturing plants, such as the use of skills, management-worker relations, the technology used and many others. Such challenges sometimes lead to the setting up of new plants in other regions where new logics of manufacturing and work can be readily rebuilt afresh. Examples are GM's Yellowstone plants, which is part of an aggressive strategy for making profits and sustaining competitive advantage. It should be noted that this is not the strategy everywhere, and that a strategy is also to locate in areas with strong industrial or craft traditions. Interviews that we held in Raufoss, Norway, suggest that the Raufoss and the Hydro plants are successful because the region has strong traditions of craft and industry going back more than 100 years. Staff at Volvo in Gothenburg suggested that regions with weak traditions of industry and craft tend to perform less well in terms of quality.

Driven by national level factors such as labour skills, labour policies, national fiscal policies, wages and worker efficiency, the 1990s saw a trend of expansion in the Asian market. Countries like Thailand, Korea and Malaysia have benefited from the expansion by attracting industrial investments. This may change, as China is rapidly emerging as an attractive base for manufacturing. Here, political factors come into play as determinants of locations for manufacturing. Certain regions of China are given leeway to exercise more liberal policies for attracting foreign investment than others, something that clearly influences locations for plants and corresponding transport patterns. Thus, fiscal policies and regulation influence location in addition to factors such as skills and traditions.

### 3.4.4 The actor dimension

With what firms and for how long can relationships be maintained for transport firms? These are questions related to life expectancy of end customer firms in industry. To start at the top of the value chain for the automobile industry, the current trend is towards few and large manufacturers. Manufacturing technologies and sophistication of logistics enable companies to profit through standardisation while retaining brand particularities, as we have mentioned in relation to platforms. Latter years have seen mergers between large automotive firms such as Ford-Volvo and Daimler-Chrysler. Smaller firms are merged into larger conglomerates. This means that the main actors on a worldwide basis are to some extent defined

and they may be expected to form a stable group of companies, at least in the foreseeable future.

A similar trend takes place with first tier suppliers. First tier suppliers tend to be large firms delivering directly to the main assembly plant, and first tier supplier firms tend to maintain a relatively close relationship with the automotive manufacturer. First tier firms rely again on specialist second and third tier firms for their supplies. Mergers and acquisitions are being carried out among supplier firms to enable rationalisation and cost cutting while retaining market shares. First tier suppliers may be expected to be fairly stable over time, not the least because the main manufacturers prefer to build long-term relationships with fewer suppliers. In the case of Volvo and Ford, for example, they are in the process of developing an *electronic space* (our term) in which the customer (Volvo-Ford) and selected suppliers have access to the same drawings, plans and schedules. It is likely that as a supplier gets integrated into this electronic space, it will remain there for longer periods of time. Another development is that whereas automotive manufacturers have traditionally worked with large numbers of main suppliers of parts, referred to as first tier suppliers, there is at present a trend of restructuring whereby automotive manufacturers reduce the number of their first tier suppliers by up to a factor of almost 10. Meyer (2000), for example, reports that VW reduced the number of its first tier suppliers from 1500 in the early 1990s to 100-200 at the turn of the century. Our interviews suggest that Volvo is carrying out a similar reduction in first tier supplier relations.

An implication is that the structure of supplier firms consists of an increasing number of layers, as the number of firms delivering directly to the main client is decreasing. These firms, however, rely on second tier firms, which again rely on third tier firms and so forth. Hence the manufacturer-supplier relationship is shifted downwards through a chain structure. The purpose of scaling down the number of first tier suppliers is to be able to work in the long-term with relatively few suppliers. The reduction in first tier suppliers signifies that automotive manufacturers wish to reduce transaction costs by securing high trust relationships over the long haul. This suggests that first tier suppliers are more likely to maintain a relatively stable demand for transport.

Still, also first tier suppliers are threatened. Interviews we held with a few suggest that they have to fight continuously to stay on the list of automotive manufacturers' preferred suppliers. Some manufacturers, such as BMW, demand that suppliers not only deliver within quality norms, but also demonstrate that they innovate ahead of other suppliers. Hernes and Kuvaas, in the study mentioned above, found a tendency internationally among

automotive suppliers to experience a high *dual* pressure both to be effective in the sense of delivering defect free, on time, and at low cost, and innovative, in the sense that they have to be ahead of competitors in developing new solutions and products. In other words, they have to show today that they are likely to be among the best tomorrow. For the suppliers, this is like shooting at a moving target. They invest in research and development (R&D) collaboration that sometimes has uncertain outcomes, but which may, if they are adopted, influence significant changes if they penetrate through to the drawing boards of the main manufacturer.

As we move down the value chain from first tier suppliers, relationships become more unstable and shifting. Third tier firms, for example, are more prone to competition than firms higher up the chain. First, they do not enjoy the same explicit intention of stable relations with their customers. Second, they are subjected to direct competition from firms worldwide, as communication technologies allow a wider network of relations to be maintained with firms across the world. The life expectancy of a supplier depends naturally on a series of factors. Larsson (1999) points out that it depends on the competitive situation:

> *"The supplier structure is linked to the power structure within the industry or sector. One dominant actor has a significantly different set of supplier power relations to take into consideration, compared to those in an industry with many more or less equal competitors. In a monopoly position many local suppliers may be extremely dependent on one customer, and have a limited possibility to negotiate."* (Larsson (1999)).

This point draws the attention to the geographical location of plants. Some countries or regions may have much less competitive firms for supplies than others, which influences the stability of supply relations. It is necessary, however, to keep in mind that for some products competition is not necessarily confined to countries or regions. The platform concept, for example, allows components to be shipped across considerable distances from competing suppliers worldwide.

## 3.5 Making the connection to needs and concerns - recommendations

We have explored changes taking place among industrial firms in the automotive sector along four dimensions. The analysis shows that there are multitudes of factors at work that may eventually influence demands for sea transport. A somewhat rough schematic summary is presented in table 1

below. It shows that factors span from demography and economic policies to technology and market forces.

**Table 1: Summary of four dimensions of change**

| **DIMENSION OF CHANGE** | **UNDERLYING FORCES OF CHANGE** | | |
|---|---|---|---|
| **THE PRODUCT DIMENSION** | SOCIAL: Extent that end customer wants tailored products. | POLITICAL: Environmental policies determine materials, secondary effects for transport of raw materials and recycling. | TECHNOLOGICAL: New materials offer advantages of weight, strength, recycling possibilities etc. |
| **THE TIME DIMENSION** | SOCIAL: How fast the end customer wants it. Whether customers want tailored goods or not depends on national norms (i.e. difference between US and Europe). | TECHNOLOGICAL: Concept to customer lead times are decreasing greatly, forcing transport firms to restructure their offers more rapidly. | TECHNOLOGICAL: Just-in-time concept makes precise and safe delivery essential. Evolution towards mixed models for batch and sequential supplies. |
| **THE SPACE DIMENSION** | POLITICAL: Investment policies and regulations influencing where production is concentrated geographically. | ECONOMIC: Labour, wages, skills are factors influencing the expansion of the industry into geographical regions and countries. | |
| **THE ACTOR DIMENSION** | INDUSTRY STRATEGY: Manufacturers and first tier suppliers expected to have relatively close relationship. Strong competition and volatile suppliers further down the chain. | GEOGRAPHY: Stability of suppliers depends on national and regional conditions for competition versus monopoly. Still, worldwide competition important for some components. | |

The above table suggests that factors that influence changes in the automotive industry are multiple and exist at various levels, from the firm to legislation and social norms. Factors such as these, however, are too disparate to simply be lumped together. In table 2 we have tried to synthesise the above discussion into categories that relate to what we see as three levels of services:

*First,* the service itself, which addresses directly the demand that customers have for transport.

*Second,* the structuring of the services. The structuring of services may take different forms, from aiming at one specialist niche to catering for various demands, from concentrating geographically to aiming to cover large areas.

*Third,* the relationship with transport firms. Not only in the transport sector, but in many industrial sectors, boundaries between service or product providers and customers are becoming increasingly obscure, to the extent that some activities are entirely integrated between the two. We have referred to above how transport providers offer instant access on-line to their customers. Whereas this is an operational measure, it is possible, indeed relevant, to envisage relationships at levels above day-today activities. We have mentioned, for example, that first-tier suppliers are becoming increasingly integrated into the main manufacturers' organisations on the design of the final product.

**Table 2: Translating dimensions of change into needs and concerns and classified by types of services**

| | NEEDS (IMMEDIATE) | CONCERNS (LONGER TERM) |
|---|---|---|
| **SERVICES** | Cost, safety, precision, needs that derive directly from just-in-time production | Environment: Increasing awareness of environmental considerations for choice of transport |
| **STRUCTURING OF SERVICES** | Differentiation: Services that are differentiated according to products, space and time, all at the lowest cost and highest possible quality | Seamlessness: Integrated transport services to ensure uninterrupted and flexible logistics of distribution |
| **RELATIONSHIP WITH TRANSPORTERS** | Reliability and accessibility: close on-line collaboration | Adaptation, intelligent forecasting and rapid restructuring: transport firms that do not just adapt to present needs, but who build in flexibility to cater for future needs that emerge |

Together, the three categories reflect three different levels of services, moving from the direct services via the structure of the services to the relationship with the transport firm. Along the horizontal axis we comment, on the basis of the discussion in the chapter, on the three groups of services against what we see as needs and concerns respectively. Needless to say, this is a schematic picture. It does, however, indicate how sea transport firms might see that their operations and structure changing in order to respond to needs and concerns of customers.

## 3.6 Towards an analytic framework

It is possible to translate the above discussion and findings into an analytic framework for strategy development for sea transport firms. Analytic frameworks are tools for identifying important challenges to a sector or a firm. They serve to highlight important issues which again open up for more focused series of questions. Development of strategies for firms derives almost exclusively from analytic frameworks that identify important questions to be assessed in the strategy formulation process. This is what again allows for tactical adjustment and implementation of capabilities of the firms to be identified.

We have developed an analytic framework that consists of two dimensions. The elements of the framework are presented schematically in the table at the end of this chapter. Together, these two dimensions serve to identify central questions in globalizing strategies of sea transport firms. The vertical dimension uses the four categories developed above as the dimensions of change (product, time, space and actors). Against this dimension a horizontal dimension is drawn, consisting of what we see as three crucial strategy areas for sea transport firms.

The three strategy areas are marketing, logistics and Human Resource Management (HRM). Marketing is important as an area of strategic focus for operations and commercial opportunities. A second strategic focus is on logistics networks. With increased demand for timeliness and cost cutting, logistics networks are increasingly having to fine-tune respective competencies of firms. Strategic positioning, both in respect to building of distinctive competencies and connecting to central players in networks allows for development of competitive edge. A third strategic focus is on HRM. This third focus is intrinsic to any long-term strategy development. HRM strategy forms the culture of working in the firm while developing distinctive competencies for sustainable competitiveness. Together, these three strategic foci reinforce the more functionally oriented strategies linked to tonnage requirements and scheduling.

The four dimensions of change (product, time, space and actor) describe fundamental shifts in the industry. Products change in two important ways. First, they change in size and form. In the case of the automotive industry, new patterns emerge, notably as the logic of assembly of cars changes. The industry, having to combine differentiation with standardisation, resorts to the platform concept. It is quite likely that similar trends take place in other industries, because resolving the standardisation – differentiation dilemma is

a global challenge to the combined pressures for efficiency and renewal of products. Second, products change in terms of materials. The automotive industry shows signs of moving from steel to aluminium, but other industries, such as food and agricultural products, also have changing needs in this respect. For example, there are changes in biological composition of food products as trends change between meat-based and cereal-based food. Changes such as these demand different conditions of transport in the way of temperature (freezing versus non-freezing temperature, for example) and humidity as well as different standards of hygiene.

The time dimension implies shortening of lead times, or rather, a larger variation in lead times. As customers demand delivery on time rather than in time, as has been common in past times, manufacturers need to adapt the lead times to the parts in question as well as to cultural variations between regions. Whatever the lead time is, transporters are obliged to respond to a larger variety of lead times coupled with a higher precision of delivery.

The space dimension reflects changes in geographical locations and corresponding changes in destinations for distribution. Related to this is the question of whether certain geographical patterns favour certain types of products. Changes in the space dimension implies that new patterns of destinations and locations of production are emerging. Changes in the space dimension are reflected in three ways. One is the redistribution of deliveries, which moves towards mixed models and global differentiation, notably between sequence supply and batch supply. Another consists of the relocation of plants of production. A third is the expansion of new markets, which depends on changes at social and political levels.

The actor dimension embodies changes in which firms determine and influence the patterns and needs for transport. The main assembly plants are normally run by the large automobile manufacturers. These tend to be main clients for transport of finished vehicles. On the side of their suppliers, however, there is a tier-structured network where decisions concerning transport depend partly on the position that firms occupy in the network. In the case of Volvo-Ford, which was studied for this project, there is another development that is of interest, and that is the seamless collaboration between the main manufacturer and first tier suppliers. A main element of this collaboration is a shared electronic space in which suppliers and main manufacturer work from the same plans, schedules and drawings. The electronic space, for example, allows for common virtual cars to be developed, including parts, profiling and materials. This means that the basis for major decisions about shape, size and materials are made between first tier suppliers and the main manufacturer on a continuous (seamless) basis.

The fact that collaboration becomes seamless has obvious consequences for the rate of change of models.

### Marketing

Marketing is an important means for building the internal culture of a sea transport firm. Marketing conveys to the external world how the firm sees itself, and in turn it reinforces the externally communicated image internally in the firm. As will be seen from the analyses below, a central element of the competitiveness of sea transport firms lies in combining differentiation with standardisation of services. Building this combined capability and communicating it helps consolidate the capability inside the firm.

### Marketing and the product dimension

The differentiation versus standardisation dilemma is global and will persist into the foreseeable future. Manufacturers are well aware of both the dilemma and of its persistence. The scientific inquiry made under this project among automotive suppliers reveals clearly that they find themselves in a situation where they have to be competent both at producing standard parts at high quality and producing new concepts for both parts and systems (Hernes and Kuvaas, forthcoming). Because awareness of the differentiation-standardisation dilemma is existent and likely to be reinforced in years to come, we suggest that marketing of sea transport services should address this issue.

### Marketing and the time dimension

There are two aspects to time with respect to marketing. On the one hand, time is in itself a commodity of marketing. With the diminishing of areas of storage, time, or rather, timing takes on increasing importance. Bearing in mind the need for differentiation, a strategic focus on marketing with regard to time would concentrate on how flexible and precise time is sold to customer through marketing. Whereas time is increasingly a commodity of marketing, marketing also takes place *in* time. The needs for differentiation of deliveries develop at different pace depending on which region is being targeted. Whereas some regions are ripe for marketing differentiated time, others are not. This again calls for different strategies for the contents of the marketing depending on which region is being focused.

### Marketing and the space dimension

It is mentioned above how the space dimension relates to social and political differences. Marketing obviously needs to address such difference, but also take into account how differences between regions change over time. It is mentioned above, for example, how regulatory practices change in part of China but not in other parts. Such changes may happen within short notice and they may be consequential for new market expansion. It means in

practical terms that a marketing strategy that applies to a certain time and place may have to be altered based on understanding of the political, economic and social changes taking place.

### Marketing and the actor dimension

It is pointed out above that the structuring of the automotive industry is done along the principle of tiers. First-tier firms are relatively stable and durable, while for second and third tier firms competition is tougher and market durability is more uncertain. Such considerations are of importance to marketing strategies, as it is obviously crucial to be able to map the structure of the industry and concentrate efforts on larger actors with better longer term prospects. This point also relates to the decision structure, which impinges on the choice of transport solutions. The study undertaken by Hernes and Kuvaas for this project suggests that decisions for standardisation, i.e. longer term contracts for similar sizes and forms of products, be taken centrally at car manufacturer first tier level. It is therefore necessary to focus marketing efforts towards levels with high decision potential, particularly for longer term contracts.

### Logistics networks positioning

It evolves from the above discussion that sea transport firms need to see their roles as positions in logistics networks; positions that depend on the four dimensions of change outlined in this report. Positioning in logistics networks enables a number of advantages to be gained, notably in terms of minimising cycle times and management of re-usable resources.

It is a clear global trend towards networking between firms. As pressures increase for firms to develop their optimal capabilities while responding to more complex demands, there is a natural drive towards inter-firm networking. Inter-firm networking allows each firm to develop its distinctive capabilities (Hernes (2002)) while gaining market access through collaboration with other firms.

The components of logistics network include producers, productive flows, primary transport, intermodal transport, storage, depots, cargo assembly, and shipping all within one network. The positioning of sea transporters in networks ties in with up-stream elements (from plant via road/rail) to port and similarly to downstream elements. Positioning in logistics networks in a world that tends towards seamlessness depends crucially upon the ability to be complementary to other actors in the overall transport processes.

### Logistics networks positioning and the product dimension

Logistics networks revolve around different product types. Some product types are highly standardised and oriented towards platforms. Others are produced directly on customer specification and are differentiated one by

one. Such differences create different logics of functioning of networks. They create different ways of inter-relation in the networks and they demand different competencies by each of the network actors. As a strategy for sea transport firms it seems important to target specifically network types through the composition of the fleet and the composition of competencies in the firm.

### Logistics networks positioning and the time dimension

Similarly, changes in the time dimension demand that sea transporters orient their services to the different network types. The different time logics of different networks demand again that firms focus on complementarity with other actors within the needs for synchronisation, precision and flexibility.

### Logistics networks positioning and the space dimension

Logistics networks need to work with a degree of differentiation of competencies in order to satisfy clients' needs as the world of industry and business is changing at present. This means that for networks to perform they require a high degree of complementarity. Complementarity can be sought at the level of software, but is also crucial at the level of hardware. In addition, complementarity is an issue for the choice of modes of co-ordination. A fourth area of complementarity is found at the level of competencies. It is precisely at this level that networks operate optimally; when participating firms can concentrate on developing their own respective competencies for increased quality to cost ratios.

### Logistics networks positioning and the actor dimension

A key aspect of current developments is, as should be clear from the above discussion, variation in the durability and stability of firms. In the automotive sector stability relates to the tier structure. The operations of networks tend to be related to the priorities of larger and more durable actors (firms). These firms are centrally located in networks, partly because they are strategically located, partly because they are big firms. This means that for sea transport firms it is preferable to establish longer term relations with first tier firms.

### HRM strategies

HRM signifies the overall pattern of recruiting, managing and motivating the human resources of the firm. By far the greatest challenge in today's world of business is to ensure that the firm is able to benefit from the knowledge of its staff. The knowledge embedded in the workforce is not, as was assumed under traditional HRM thinking, to be managed and controlled. In a world where the complexity of processes in the business environment easily extends beyond the capability of the individual manager, the knowledge of individual staff is something to be nurtured, developed and utilised by the

firm. Sea transport firms operate in a world of an almost unique complexity of political, economic and cultural factors. Therefore, in order to gain and sustain competitive advantage, their ability to acquire and fully draw upon a diverse body of knowledge among their workforces becomes paramount.

### HRM strategy and the product dimension

The product dimension embodies shapes and sizes as well as materials. The standardisation versus differentiation dilemma is central, and these factors together call for the ability to combine transport service in novel and innovative ways. HRM in today's business is intimately connected with needs to respond, not just in predictable ways, but also drawing upon the ability to innovation in order to meet quality standards while cutting costs. Competitive edge of companies depends in part on being able to build innovation processes into the operations, which again demands that HRM practices are geared towards innovation as well as efficiency. This holds for industrial firms, as shown in the report prepared by Hernes and Kuvaas (forthcoming) under this project, but it is no less important for service firms, including sea transport firms.

### HRM strategy and the time dimension

Time as we discuss it here relates to the ability to respond in a seamless reality. It poses challenges to the profile of recruits, such as ability to act and to solve problems. It also requires that the decision structure is sufficiently decentralised to confer decision autonomy at the functional levels.

### HRM strategy and the space dimension

The space dimension involves social, political and economic factors. Sea transport firms need to monitor their intelligence units to ensure that their staff composition enables analytical understanding of social, political economic factors in the regions where they are active. This report provides illustrations that economic forecasting and analysis is necessary, but not sufficient. To understand and appreciate the forces behind change, political and social factors are essential.

### HRM strategy and the actor dimension

The transport-production relationship is driven by the need for seamlessness, which again calls for ability on the part of transport firms to take decisions in a decentralised fashion. HRM strategies therefore need to be oriented towards a high degree of responsibility in the field. Bearing in mind the global nature of the industry, staff and managers in the field need also to be conversant with norms for collaboration and networking in different cultures.

The above points are combined into a table, which serves as an analytic framework, as shown in the below table.

**Table 3: An analytical framework for strategy development**

| | **MARKETING** | **LOGISTICS NETWORKS POSITIONING** | **HUMAN RESOURCE MANAGEMENT** |
|---|---|---|---|
| **THE PRODUCT DIMENSION** | Address the standardisation-differentiation dilemma | Target network types through composition of fleet and competencies in the firm | Gear competencies towards product knowledge and innovation capability for transport solutions |
| **THE TIME DIMENSION** | Marketing of timing, and also marketing in time | Target complementarity with other firms for synchronisation, precision and flexibility | Decentralise decision structures and target recruitment procedures to ensure intelligent and responsive decision-making at functional levels |
| **THE SPACE DIMENSION** | Target marketing in relation to political, social and economic change in regions | Search for complementarity in software, hardware, co-ordination modes and competencies | Ensure development of intelligence units that capture political, economic and social trends |
| **THE ACTOR DIMENSION** | Target marketing principally at main manufacturer and first tier delivery firms | Establish longer term relationships with main manufacturer and first tier delivery firms | Aim for recruitment and development of HRM that ensures effective collaboration in different regions and with different firms |

# 4 The need for strategic adaptations in shipping

The purpose of this chapter is to point out the usefulness of scenario approach to strategic planning in shipping, and to discuss the particular impact on shipping scenarios of structural changes in the organisation of certain market segments. On this basis the chapter goes on to discuss implications in the human resources sector of shipping management – i.e. additional competence requirements that follow from organisational change in the shipping trades.

## 4.1 Scenario analyses as strategic tools

The typical shipping scenario comprises parameters pertaining to:

- Cargoes, i.e. commodity types, lot sizes, packaging (cargo type), frequencies.
- Trading areas, i.e. locations of cargo origin and destination, ports and distances.
- Tonnage requirements, i.e. vessel types and numbers, handling gear, propulsion and speed, tonnage market.
- Costs and revenues, competition at the levels of trade, logistics and transport.
- Trading partners, i.e. customer/supplier relationships at the levels of trade, logistics and transport.

It is possible to identify drivers in international trade, which impact on these scenario components individually and on the scenario as a whole when the scenario is viewed as a system of interdependent components.

The principal drivers that are usually taken into account are changes in the composition, volume and direction of world trade; changing demographic patterns; changes in trade policies and political relationships; changing patterns of economic and social development; changes in transport technology, changes in the organisation of the trade in which shipping participates, and the organisation of the logistics services within the particular trades, see Minsaas, Omtvedt, Sødal and Wergeland (2000), *Fremtidig utvikling i skipsfarten og skipsfartens markeder*.

It is the latter drivers – changes in organisational patterns and logistics patterns – which are the main concern of this report.

Chapters 2 and 3 discussed the organisational changes within logistics and the particular system changes in the trade of the automotive industry. They reveal significant change in parts of international trade and logistics.

The implications of these changes for the overall scenario are the general concern of the present chapter. It presupposes that it is possible to study changes in the individual drivers and assess the repercussions on the overall scenario. It requires study of the interaction between drivers and assessment of the overall outcome.

The specific concern of the chapter is to provide a methodology by which shipping companies may utilise scenario research in order to identify market positions and make strategic decisions that relate to their own organisation in terms of:

- trading partners, agents and alliances,
- degree of specialisation,
- competencies,
- marketing.

There are, of course, several methodological approaches, which may apply to determining the market positioning of shipping companies. It is, however, recognised that scenario analysis and experimentation are powerful and relatively simple means of considering different strategic models for the shipping companies and for identifying innovative solutions. Most recently this method was applied to a large Norwegian company in a thesis at the Norwegian School of Management, see Nordsti, Heggelund and Eidem (2002), *Wallenius Wilhelmsen Lines. Future Supply Chain for WWL – a Scenario Analysis.*

It serves to sharpen this focus that both shipowners and shippers seem keener to develop new business concepts than to rely solely on cost reduction. The ability to innovate is perhaps the only long-term competitive advantage of modern companies, see Marintek (2001), *Logistics and Value Chains*. The new focus is on what to do under varying circumstances. The scenario technique is well suited to simulate varying circumstances without actually waiting for them to happen. Similarly, when events are about to take place – or actually happening – scenarios are excellent tools for considering repercussions on particular firms, and to experiment with strategic options.

Scenario analysis has been used by the private sector for the last 25 years to manage risk and develop robust strategic plans in the face of an uncertain

future, see Maack, Jonathan N, (2000), *Scenario Analysis: A Tool for Task Managers*. Like simulation and war games scenario exercises emerged during and after the World War II. The technique is applied to virtually any situation in which a decision-maker would like to imagine how the future might unfold. The method is useful in strategic planning to gain a better understanding of the dynamics of present and future change, as well as for decision-making under uncertainty, see Schoemaker, Paul J.H. (1995), *Scenario Planning: A Tool for Strategic Thinking*.

Scenarios are more than just the outcome of a complex situation model. Instead they attempt to interpret such output by identifying patterns and clusters among the million of possible outcomes a computer simulation might generate. They often include elements that were not or cannot be formally modelled, such as new regulations, value shifts and innovations. Hence, scenarios go beyond objective analyses to include subjective interpretations. Above all, scenarios are aimed at challenging the prevailing mind-set.

A scenario is not a prediction of specific forecasts per se; rather, it is a plausible description of what might occur. A forecast is developed by quantitative methods and its results can be measured. Scenario analysis is based on qualitative methods. Scenarios describe events and trends as they could evolve, e.g. in the way that they are developed in the following sections of this chapter.

Scenarios are designed to expand a planner's vision. A certain amount of creative thinking and imagination is essential to the process. Optimisation against a specific future target is replaced by a balanced evaluation of the range of strategies that may be required. The process changes the planners' perceptions and evaluation of the full range of events and trends that may actually occur. Instead of each possibility being a potential threat to a rigid plan, they tend to be evaluated as sign posts, indicating paths along the way to alternative and anticipated futures, see The Futures Group (1994), *Scenarios*.

Scenarios can be used to:

- identify early warning signals,
- assess the robustness of core competencies,
- generate strategic options,
- evaluate the risk/return profile of each option in view of the uncertainties.

## 4.2 Challenges to shipping companies (I): Structural change in market segments

Powerful tools of analysis exist to describe the process of globalisation and monitor movements within it. It is also possible to identify certain basic strategic scenarios or models, which are suitable for application to different stages in the process of globalisation.

For the individual company, retaining and strengthening competitive position would be the primary purpose of globalisation and consolidation.

This is manifest in the wish to achieve cost reduction and advantages related to marketing. Cost reduction may be obtained by (i) relocation based on geographical variations in factor costs, (ii) advantage of scale, and (iii) advantages that relate to experience of production. Marketing advantage is usually sought by adaptation of products to local markets and adaptation of distribution (logistic) systems to local demand.

All these measures of globalisation must by reflected in necessary reorganisation of transport services. This carries implications for the volumes of seaborne trade, as well as for sailing frequencies, cargo types, lot sizes and routing.

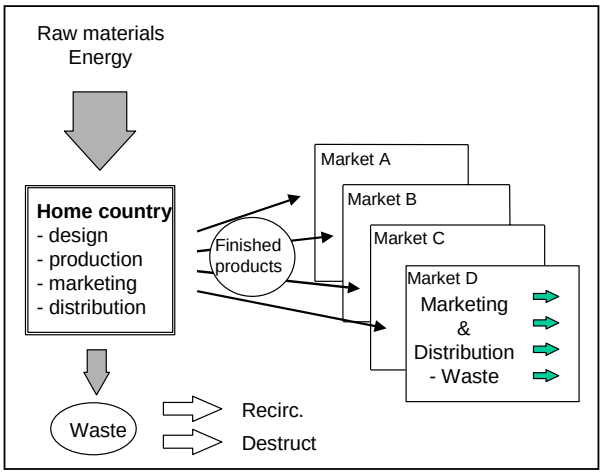
It is practical for analytical purposes to distinguish two basic groups of strategies for the international behaviour of firms. A number of sub-categories may be identified within each group. The strategy groups represent a balancing act between two main drivers: the need for local customer adaptation, and the need for cost reduction or efficiency. Moreover, each of them will have specific characteristics in regard to:

- logistic requirements (the space dimension),
- cargo types (the product dimension),
- decision-makers (the actor dimension),
- frequencies and lot sizes (the time dimension).

### 4.2.1 Changes in sea transport demand in an international trading strategy

Conventional export to overseas markets would usually be based on production in the home country, and a transport pattern such as that which appears in the following diagram:

**Figure 1: The classic export model**




Decision-making on design and logistics would normally rest with the exporter, modified only in cases of free on board (fob) purchase. Decisions on local distribution in overseas markets would normally rest with the importer. Home country control in overseas markets would typically be low, but so would risk once purchase is made and paid.

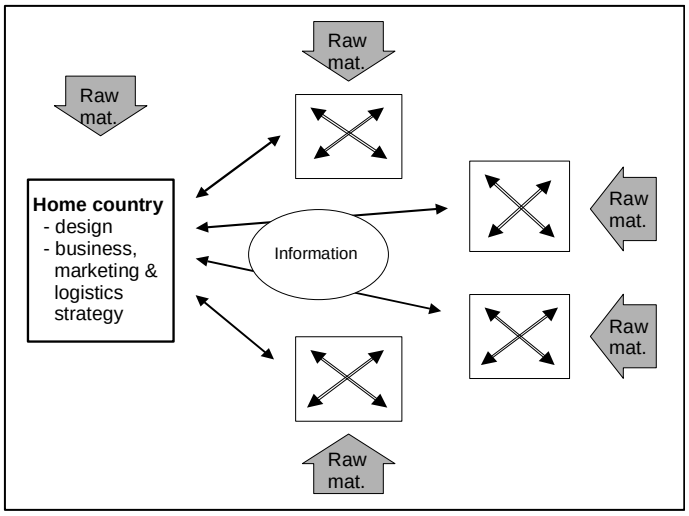
International strategy would usually follow upon the conventional export model as a result of expanding demand and/or increasing demand for product adaptation to local markets. Factor costs would normally be the main driver.

In this strategy, the home-based mother company would establish subsidiaries in key markets. Design and product development would usually remain with the mother company. Transfer of production competence, however, would take place when such competence is not inherent in the target area. Product adaptation to local needs or preferences may be moderate.

In comparison with the conventional export model the flows of raw materials would be fragmented, and overseas transport of manufactures would be reduced. To some degree, transport of manufactures from the home country may continue to such areas where the establishment of new manufacturing subsidiaries would not be commercially feasible. Parts of these overseas

flows of manufactures, however, may be taken over by some of the new subsidiaries.

**Figure 2: Transport patterns in an international strategy**




In the former import countries new inflows of raw materials will give rise to new transport demands. These, however, may be different in volume, cargo types and frequencies as compared with the original ones. This would change demand in terms of tonnage and ship types, and would most probably increase the cost of the sea transport component in the overall logistics network.

Increased logistics costs of raw materials would, in principle, be offset by reduced overall costs of sea transport of manufactures (in a static picture).

Domestic distribution of manufactures may increase in volume because increasing demand was part of the reason for investing in new production facilities, and the pattern would change because the former ports of import may no longer be the sites of new establishments.

A further strategy of internationalisation may involve increasing transfer of responsibility for product design and further independence of the home country.

Important shifts in terms of personnel competencies and decision-making authority would follow a strategy of internationalisation. These would have important repercussions for HRM and human resource development. They would also require important shifts – fragmentation - in terms of the individuals with whom the transport supplier negotiates and concludes agreements.

### 4.2.2 Changes in sea transport demand in a global trading strategy

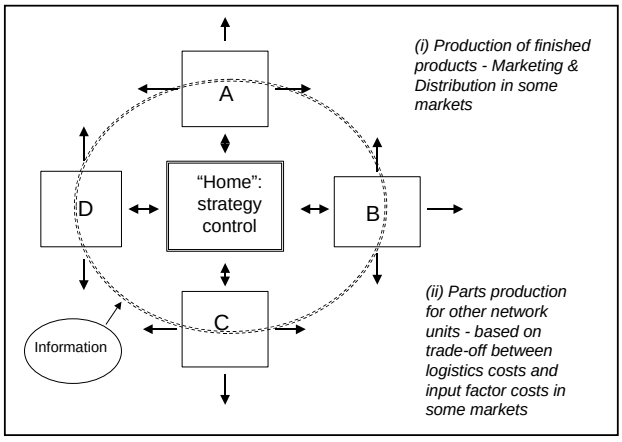
In a global strategy companies attempt to locate production activities in such a way that factor costs are reduced to an aggregate minimum on a global basis. This strategy may be carried to the point where product components are manufactured in different geographic locations, and assembled in others. Subsidiaries in different countries would thereby specialise in different part of the overall production process, and participate in varying degrees in distribution of final products.

The implications for transport would be even more fragmentation of raw materials flows, but not necessarily to the same extent as in the previous examples. This follows from the degree of specialisation as between the production units within the strategy.

Further, the transport of products will now include both finished and semi-finished manufactures. This complicates logistics because there is distribution of semi-finished products within the system, and distribution of finished products with varying degrees of market adaptation generates some – but not necessarily all – locations in the system, see figure 3 in which the arrows amply illustrate transport fragmentation.

As compared with a conventional export model and a conventional shipping operational mode, contrary to one with shipping services in a comprehensive logistics system, global strategies involve considerable changes in demand for competence. The same applies to shifts in the location of personnel who make decisions in regard to requirements and use of maritime transport.

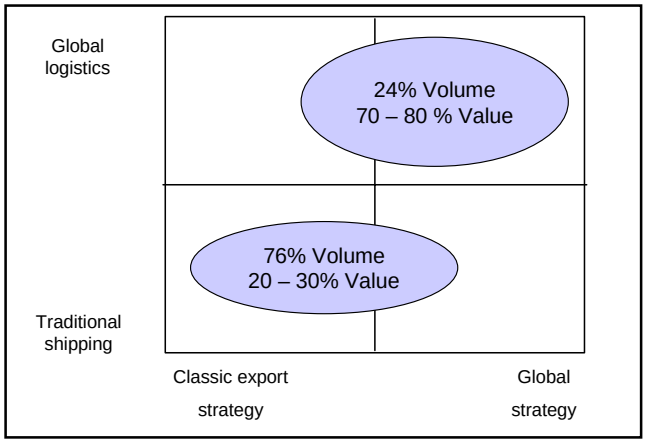
**Figure 3: Transport in global strategies**




### 4.2.3 Implications for shipping companies

It is possible to establish that the larger value share – and the smaller volume share – within a few years will be found in the upper right hand parts of a matrix that relates conventional and global strategies, and conventional shipping operations versus shipping as part of sophisticated logistics systems, see figure 4.

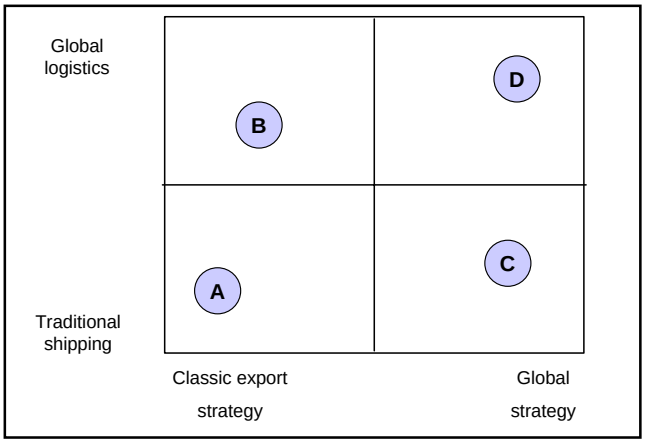
**Figure 4: Relating world seaborne trade to strategies of globalisation and logistics**



It was indicated above that prevailing strategy with regard to organisation in international trade significantly impacts on operational shipping parameters (routing, cargo types and sizes, frequencies, vessel types and sizes) as well as on the competence profiles, which are required in participating companies. It was further shown that shifts in competence requirements are largest in connection with global strategies and global logistics.

It is important for shipping companies, therefore, to identify their location(s) within the above matrix in order to meet challenges of change and competence shifts. Companies A, B, C and D in the hypothetical chart below will find themselves in significantly different positions in these regards:

**Figure 5: Relating shipping companies to strategies of globalisation and logistics**




Shippers – large and small – are rapidly increasing their awareness of the competitive advantages inherent in overall logistics planning. In logistics and supply chains globalisation, consolidation and various forms of networking have long since become a strong trend. In certain market segments shipping companies will find themselves at severe competitive risk unless they carefully plot and monitor their market positions and heed the organisational changes in those markets.

## 4.3 Challenges to shipping companies (II): Implications for Human Resource Management (HRM)

The process of globalisation has accelerated during the last couple of decades, with implications as illustrated in the previous sections of this chapter. While the process primarily impacts on the smaller volume share of international seaborne trade – about 24 per cent - this share accounts for more than 80 per cent in terms of value, see Minsaas, Omtvedt, Sødal and Wergeland (2000), *Fremtidig utvikling i skipsfarten og skipsfartens markeder,* table 5.1.

Concurrently, the environments of politics and trade policy have changed dramatically since the fall of the Soviet Union, the end of the Cold War and the expansion of the EU – with reduced trade barriers as a consequence.

This has had a major impact on how business is executed worldwide, as evidenced in chapter 3. For many industries this has led to an even more competitive business climate with consolidation (meaning fewer, bigger and more specialised units) as the answer. Major innovations in technology development have resulted in increased efficiency and productivity. In addition, we have seen major changes within ICT – e-mail/internet – for communication purposes and Enterprise Resource Planning (ERP) systems for information flows. This ICT revolution has enabled organisations to enhance their business and decision-making processes with increased quality and service as a result.

Changes in the demography of the workforce provide further and fundamental challenges. The age structure has changed dramatically during the last two decades. Together with a decrease in birth rates in traditional shipping countries this emphasises a management commitment to the competition for talents. In all industrial countries and some developing countries the birth rate is very low. Even with all new technologies introduced to replace human resources in the production process, we are not able to compensate for the lack of new talent.

It is probably also true that the transport/logistics sector in Europe will continue to consolidate and end up with a handful of players controlling as much as 80 per cent of transport work within the next 5 -10 years, see chapter 2. This will have a major impact on the shipping industry as an associated business in the value chain. The shipping business is conservative by nature. The core of the maritime cluster – the shipowner – has more or less utilised the same business model, organisation structure and core competence since the Second World War, although with introduction of

bigger ships and more sophisticated cargo handling facilities. There are, of course, some exceptions, i.e. the car carrier segment, which started to develop in the seventies, and still, continues its evolution to meet customers' requirements.

The impact of globalisation and consolidation on the international shipping industry raises serious questions of the following order:

- How can the industry cope with the challenges that are posed by the scenario impacts, which are described in this report?
- Will existing business models function in the new environment?
- What are the consequences for leadership execution in this new environment?
- Do the organisations have the right core competence to cope with the new challenges?

In order to explore these questions we have conducted a survey among executives in ship owning companies, shipbroker firms, ship management companies, industrial associations, educational institutions and different suppliers. They have been asked to reflect on the following issues:

*"What are the main characteristics of the development in international shipping?*

- *General political and macro economical changes,*
- *Supply and demand,*
- *Development in different geographical markets,*
- *Consolidation within transportation/logistics world wide.*

*How does this impact on your segment(s) in international shipping in general and your company in particular?*

- *Supply/demand for cargo and tonnage,*
- *Consolidation needs and opportunities (critical size, cost levels and infrastructure),*
- *Value adding measures/activities to secure attractive clients (alliances/partnerships).*

*How will the above influence your needs for leadership competence and core competence when looking ahead?*

- *Leaders,*
- *Specialists,*
- *Other competence areas."*

The findings, based on interviews with more than 60 executives of shipping companies, are embedded in the text below.

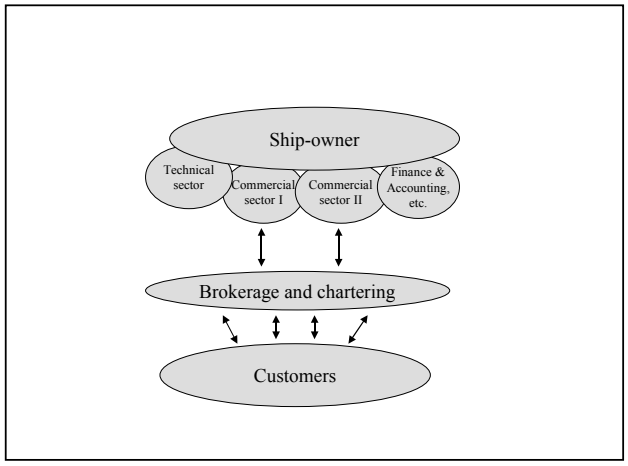
### 4.3.1 Business models

Will the traditional business model (low end customer focus) function in the new environment?

The most common business model (see figure 6 below) has been to function as a tonnage provider offering ships to cargo owners and charterers. The customer relationship has been handled through brokers and charterers. The broker and charterer have been taking care of customer needs and matching that with available tonnage.

A value chain focus with customer relations to the producers of raw material in the beginning of the value chain has been the *modus operandi*. To a large extent, the organisations controlling the market mechanisms have been brokers and charterers.

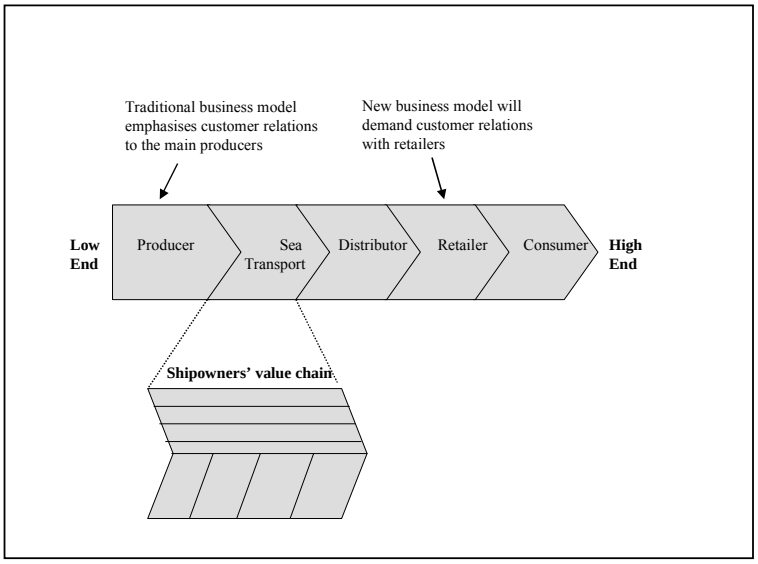
**Figure 6: The traditional business model**




International shipping has long traditions in strong ties to families that have been in the industry for generations. Their management philosophy has been active involvement with commercial and technical know-how as basis for a hands-on management style.

Shipping has always been known for an opportunistic attitude, a strong focus on the vessel and a return on investment below other industries. To compensate for that, the only way of creating acceptable value for owners has been to execute asset management and timing the operation of asset play. The individual company scenarios have been relatively simple, and concentrated within the sea transport segment of the overall value chain.

**Figure 7: The value chain of international trade**




We believe that the current challenge is to invest in segments of the value chain, but at the same time being willing and able to participate by capital allocation or otherwise in associated services/infrastructure - in co-operation with customers and other contributors within the chain.

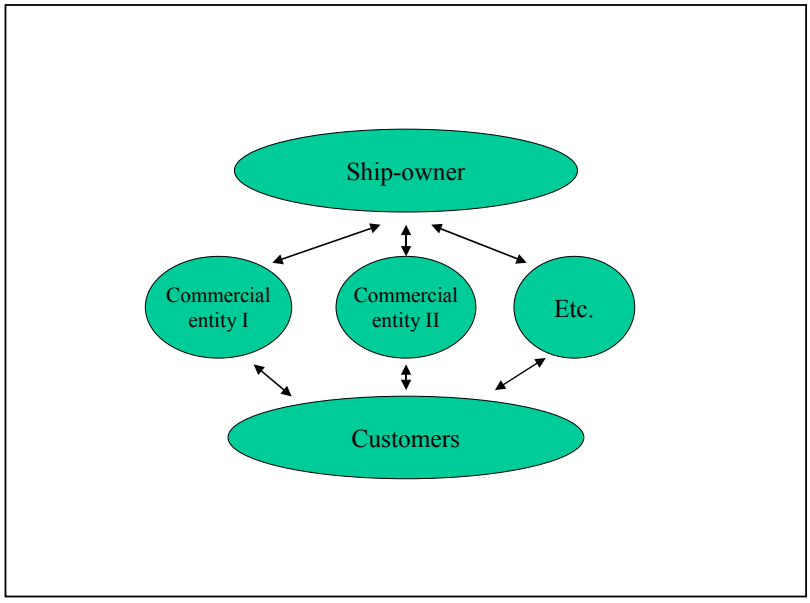
The arguments that are put forward in favour of this model are:

- To build a sustainable business one must define who is the "real" customer (closest to end customer) and organise accordingly.
- A consolidation process will reduce the number of entities/organisations in the value chain and force the organisations involved to collaborate closer.

- Introduction of new information and telecommunication technology (ICT) will give competitive advantage to organisations utilising a transparent information flow towards their customers.
- A consolidation process forces organisations to focus their business and have the necessary financial strength to execute a growth strategy, i.e. invest in new technologies, innovate new products, execute mergers and acquisitions and develop the organisation and its human resources.

We believe that the focus on the end customer approach will by necessity be a prerequisite for the business models of the future. Figure 8 below, visualises the changes, which involve the shipping company in a commercial scenario of networking throughout the supply and trade chains:

**Figure 8: New Business model**




These arguments are based on the fact that an organisation eager to succeed and build sustainability in a consolidation phase must develop a strategy, which emphasises both vertical and horizontal integration: Horizontal, because a consolidation process calls for fewer players in the same part of the value chain. Vertical, because in order to build sustainability the organisation must be willing to invest in – or otherwise become involved in - a larger part of the value chain and thus reduce the number of organisations involved in the value creation process.

Consequently, we believe that the consolidation process will change focus in international shipping from being a tonnage provider to become a service provider.

### 4.3.2 The service provider

In the traditional role as tonnage provider, the shipowner focused on financing and asset management of the fleet. The vessels were commercially handed over to the chartering and brokering departments, doing the best they could in competitive markets.

A service provider will take another approach. First of all, he will define the market to serve and then identify the customers within that market. The next step will be to ask potential customers – what are your transport needs? Based on this, the service provider will develop a chartering strategy in line with customer needs – defining the appropriate vessel (size, cargo-handling capabilities, flexibility etc.) and the size of the fleet.

The vessels will be chartered in from preferred owners. The transport solution will also incorporate information services required by the customers. Through the development of new ICT solutions (i.e. e-mail, internet) the service provider role is evolving. This emphasises a logistics approach to support customers' needs.

In some shipping segments there are successful organisations that have developed business models reflecting this change. By doing so they have been able to build relationships with key clients and integrate their operation in a way which creates increased value. One finds these examples in the container segment, the car carrier segment and also in the chemical segment. The reason for this has been the specialisation of ships and the technical challenge to build and manage these vessels.

In the future, sustainability should be based on profitability, productivity and differentiation. One cannot place the trust entirely on an entry barrier developed on the basis of sophisticated hard assets. The barrier must emphasise a strong commercial presence – long-term commitment in the commercial organisation to develop its infrastructure and soft assets (leadership talents and core competence).

The main success factor is to have a separate organisation developed to handle this presence. This entity should be set up in close co-operation with

the main customers and provide them with tailor-made solutions. The vessels are provided by preferred ship-owners with an *arm's length* to the commercial entity. In these alliances there will be a shared responsibility and one develops a risk profile reflecting a commitment to key clients.

As stated earlier, container shipping has been in the forefront of this development in international shipping. Liner companies are service providers who, when they require additional ships may turn to the charter market to fulfil their tonnage needs instead of building them.

In the past, liner-shipping companies generally owned their own vessels, but this has changed during the last ten years. Carriers have realised they can make more money by focusing on moving cargo rather than owning and operating ships.

As an example - ten years ago, there was a small number of tramp feeder vessels. A few companies, Maersk and Sea-Land among them, time chartered those feeder ships to serve the ever growing trades they offered their customers.

Then there came a period during which some liner companies, mainly Hyundai and Hanjin, decided that they wanted to monetize their assets, so they sold their ships and then time-chartered them back.

Those vessels eventually became available on the charter market, and when they did, they proved to be larger and faster than the feeder ships that had been traditionally available. The larger liner companies took notice, snapped them up and deployed them in their regular liner routes.

The next logical step was for independent owners to build bigger and faster vessels purposely for the time charter market. Liner companies, no longer burdened with capital commitments for ship construction, could invest in the value chain, i.e. infrastructure projects like terminal development and information technology.

Today, that step has evolved into exclusive partnerships between global liner companies and independent shipowners. The owners build and operate vessels, which are then time chartered and deployed in the liner companies' networks.

Just as these organisations have lowered their cost of capital by creating symbiotic relationships with certain trusted shipowners, we believe the next

step will be a similar one between some of the largest shippers and a few forward-thinking shipowners directly.

From our perspective this is the way to proceed. But it requires a more diversified approach to organisation and human capital development, which can only be achieved by a broader and more modern leadership perspective.

### 4.3.3 Leadership

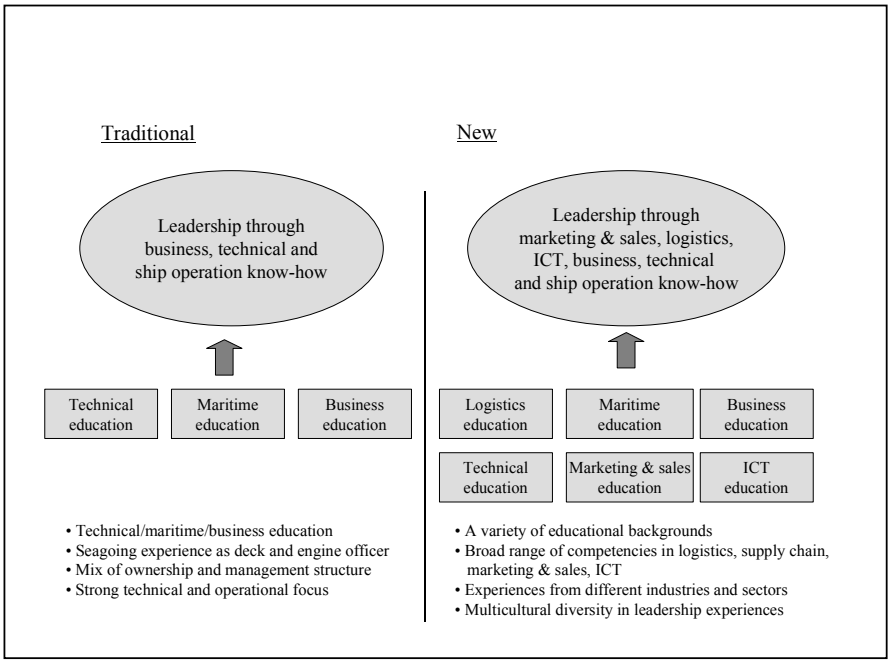
What are the consequences of the above reflections for leadership execution?

The leadership tradition in shipping has been to be hands-on and engage oneself as an owner in day-to-day operations both commercially and technically. An in-house expertise in all aspects of running a company has been the key to success.

Leaders from the ship-owning families with experience from technical and commercial operations used to be the mainstay of the management structure. In addition, many leaders have their educational background from maritime institutions including seagoing experience as deck and engine officers. This has been a solid platform for their leadership, and a thorough selection mechanism to recruit talents from the sea to a management career on shore. Their solid experience and strong operational focus have made the organisation flexible and able to act and turn around on short notice. Changing trading scenarios impact significantly on where the interface between the customer and the shipping company will be. This is illustrated in some detail in chapters 2 and 3. This again changes the way leaders get knowledge/experience from customers.

In the future there is reason to believe that shipping organisations need to take a broader view of the leadership role than the traditional maritime/operational/financial specialities currently in fashion. There is a need to develop a diversified management culture – i.e. by attracting people with leadership experience from related industries.

**Figure 9: Traditional versus new leadership competence**




Taking into account the need to broaden the leadership role and also to base it on development research in HRM, we believe that a successful organisation will need to emphasise the following leadership challenges during the years to come:

- Develop a transparent organisation culture with well-known and accepted values.
- Develop change as a natural part of the organisation culture. People in an organisation should ask for change, they should actively support and promote innovation and change.
- Define performance measurement criteria for key executives within human capital development as an integrated part of the company's existing bonus system.
- Develop a succession policy based on some fixed criteria.
- Develop a long-term HRM strategy reflecting the company's business strategy, where the main objective is to develop tomorrows' leaders and their core competence.

### 4.3.4 Core Competence

The core competence in the shipping business has traditionally been people with seafaring experience. The career patterns have typically been deck officers recruited into positions in the shore-based organisation through chartering and operation. For engineers the opportunities have come through the technical departments.

The existing education system does no longer support this philosophy. In the companies the challenge is to build a sustainable HRM strategy based on the changing external scenarios. This would by needs have to take into account new aspects of business such as those reviewed in this report. The strategy may also have to make room for developing staff with a broader variety of backgrounds than was the traditional case.

Therefore companies cannot focus on the traditional recruitment and development strategy - a natural selection process beginning at sea as the young seafarer starts to *climb the ladder* on board, and after 10-15 years enter into the next step of his/her career with opportunities within the shore-based organisation. Companies need to open up to more diversified skills (roles) and backgrounds that would reflect the new challenges. This means that a change in business model must be reflected in the leadership skills and core competencies needed in the organisation. This broader view on core competencies must also reflect future changes in how to do business.

In this process, it is possible to pinpoint a few new areas of key competencies – not necessarily replacing, but supplementing the traditional ones:

- Risk management,
- Logistics management (Supply chain management),
- Customer relationship management,
- ICT management,
- Strategic marketing & sales management, including brand building.

## 4.4 Implications for shipping companies

This chapter describes three concepts, which will probably be crucial to strategic planning in shipping companies:

- Demand for shipping services – in certain sectors – is subject to a process of fragmentation.

- Scenario analysis is probably the best way to cope with strategic development in shipping companies.
- Innovation in the organisation of logistics services, and rationalisation of management structures, raise additional demands for competencies in shipping companies.

### 4.4.1 Fragmentation of trade and transport demand

In a static situation chapter 4.2 would indicate continuing and additional fragmentation of sea transport demand related to manufactures, as shown in the automotive industry, chemicals and cement, semi-finished iron and steel products, fertilisers and petroleum products. While these commodities only account for about 25 per cent of the volume of seaborne trade, they constitute about 80 per cent of its cost insurance freight (cif) value.

The fragmentation is shown as a tendency towards increasing numbers of raw materials cargo flows, smaller lot/cargo sizes, less transport demand for manufactures and products, but increasing frequencies.

In this scenario, the biotope for new organisational patterns of logistics is obviously fertile. The particular analysis of change in the automotive industry, which is the subject of chapter 3, underpins this conclusion.

The shipping company, in the limited sense of the term in which sea transport is the only product, would have to operate as a specialised supplier of semi-finished transport services, or expand its horizon to become a fully fledged fourth party logistics provider. New establishments, take-overs or alliances could achieve this.

The dynamic situation, which includes a number of drivers other than those discussed in this chapter, is more complex and less obvious in its implications for tonnage requirements and transport capacities.

These drivers include general development – although uneven – of international trade, conditions of industrial and market location being influenced by political considerations, developments in transport technology, and transport policies pursued by individual countries and economic/political blocs such as the EU. Not least among the drivers would be the changes in logistics techniques and organisations that were the subject of chapter 2.

### 4.4.2 Scenario analysis as a means of strategic planning

The availability of scenario analysis as a tool to strategic planning facilitates taking into account the complex of change drivers that was reviewed in the above.

Scenario planning stands out for its ability to capture ranges of possibilities and their driving forces.

By identifying basic trends and possibilities – such as those described above – strategists may construct series of scenarios that will help to compensate for the usual errors in decision-making. In scenarios, large volumes of data may be compressed into a limited number of possible states.

The analysis explores the joint impact of various uncertainties. They are designed to bring up issues that otherwise would not be considered, by exploring the underlying forces in a sector or region – again such as those described in the above texts.

Scenarios are most effective when dealing with big issues and strategic decisions, rather than tactical decisions, and should not be used for short time planning.

### 4.4.3 The need for new competencies

The shipping industry is a part of the transport/logistics chain, and as such the industry should evaluate the need for business models more in line with what is common in service organisations within land-based transport/logistics and in the aviation industry.

In that perspective companies need to perform appropriate HRM analyses. This assessment should be based on a value chain focus with strong attention to customers' needs and also how the organisation can co-operate closer with organisations representing other parts of the value chain. For some organisations this may imply a different customer perspective and changes in how to do business.

Most shipping organisations are well experienced in issues related to financial, legal and structural challenges. On the other hand, to deal only with these issues is not enough in a business climate undergoing major changes. The ability of the organisation and its human resources to implement changes are just as important. On this basis, it will be critical to

develop an organisation culture and not at least a leadership culture emphasising innovation and change as a natural part of the consolidation process going on. Today, many shipping cultures could be described with the following key words: Conservative, equal to all, polite and nice. Modern leadership performance is less described and communicated. Objective consequences of over and under performance as a leader are not implemented.

It follows that the key HRM issues to address would be:

- Necessary changes in the business model of the shipping company as well as that of the trade it serves.
- The leadership role.
- Changes in organisation structure and management structure.
- Adjustment of the core and support activities.
- Evaluation of the need for other than the traditional shipping competencies, in fields such as global logistics organisation and management.

The output from such assessment should be incorporated in a HRM strategy, specific to company needs and development scenarios.

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